

—Between High EEG Coherence and a Unified Cosmic Perspective on Life (Vol. 3: 223)

19. Charaka—BALANCING—HOLDING TOGETHER, NOURISHING, and SUPPORTING

- Improved General Health (Vol. 1: 2, 35, 40–42, 44, 95; Vol. 2: 125–127, 150, 153, 157, 160; Vol. 3: 232, 238, 239, 241, 243, 247, 278, 280, 290; Vol. 4: 300, 314; Vol. 5: 370, 377–380, 395, 396, 399, 400)
- Younger Biological Age (Vol. 3: 242, 245, 246)
- Increased Autonomic Stability (Vol. 1: 25–28, 87; Vol. 2: 123, 130; Vol. 3: 197, 205; Vol. 5: 356)
- Fewer Hospital Admissions for Bone and Muscle Diseases (Vol. 5: 378)
- Improvements in Patients with Chronic Back Pain, Rheumatoid Arthritis, and Other Complaints (Vol. 3: 238)
- Fewer Hospital Admissions for Gastro-Intestinal Disorders and Irregularities of Metabolism (Vol. 5: 378)
- Improvements in Patients with Dyspepsia, Chronic Colitis, and Other Complaints (Vol. 1: 95; Vol. 3: 238)
- Improved Blood Sugar Control in Patients with Diabetes Mellitus (Vol. 3: 238)
- Lower Hospital Admissions Rate for Heart Disease (Vol. 5: 378)
- Improved Cardiovascular Efficiency (Vol. 1: 35; Vol. 2: 130)
- Fewer Medical Complaints during Pregnancy (Vol. 3: 234)
- Greater Family Health (Vol. 5: 400)
- More Balanced Mood (Vol. 1: 65, 77; Vol. 3: 277; Vol. 4: 308)
- Charak Samhitā as well as the other five Samhitās of Maharishi Āyur-Veda are the collection of results of research of thousands of years, true for all times.

20. Sushrut—SEPARATING

- Increased Purification in Physiology, Indicated by Extensive Research on Maharishi Ayur-Veda:
 - reduction of excess free radicals through Maharishi Amrit Kalash (herbal food supplement);
 - enhanced immunity through Maharishi Amrit Kalash;
 - cancer prevention and regression through Maharishi Amrit Kalash;
 - reduced cardiovascular risk factors through Maharishi Amrit Kalash;
 - anti-ageing effects through Maharishi Amrit Kalash;
 - reduction of excess free radicals through the Maharishi Vedic Physiological Purification Programme;
 - reduction of cardiovascular risk factors through the Maharishi Vedic Physiological Purification Programme;
 - increased emotional balance through the Maharishi Vedic Physiological Purification Programme (ref., H. Sharma, Freedom from Disease, 1993)

- Increased Purification in Physiology, Indicated by Lower Health Insurance Utilization Rates: Significantly Fewer Hospital Inpatient Days, and Outpatient Visits in All Age Categories; Fewer Inpatient Admissions for All Major Categories of Disease (Vol. 5: 378, 379)
- Sushrut Samhitā as well as the other five Samhitās of Maharishi Āyur-Veda are the collection of results of research of thousands of years, true for all times.

21. Vāgbhaṭ—COMMUNICATION and ELOQUENCE

- Increased Ability to Express One's Feelings Spontaneously (Vol. 1: 64, 69, 70, 76; Vol. 2: 151, 153; Vol. 4: 316)
- Improved Verbal and Analytical Thinking (Vol. 1: 54–56, 58, 62, 63, 103; Vol. 2: 134; Vol. 3: 260, 265; Vol. 5: 387, 389, 390, 392)
- Greater Regard for Etiquette (Vol. 2: 153)
- Lower Hospital Admissions Rate for Diseases of the Nervous System (Vol. 5: 378)
- Lower Hospital Admissions Rate for Nose, Throat, & Lung Diseases (Vol. 5: 378)
- Vāgbhatt Samhitā as well as the other five Samhitās of Maharishi Āyur-Veda are the collection of results of research of thousands of years, true for all times.

23. Shārṅgadhara—SYNTHESIZING

- Improved Synthetic and Holistic Thinking (Vol. 1: 103; Vol. 2: 135, 140; Vol. 3: 257, 260; Vol. 5: 393)
- Duration of Practice of Maharishi's Transcendental Meditation and TM-Sidhi Programme Found to Be Predictive of Superior Performance on Tests Measuring Age Related Psychological Variables: Visual Memory, Creativity, Field Independence, Perceptual Speed, Motor Speed, Reaction Time, and Non-Verbal Intelligence (Vol. 3: 257, Vol. 5: 392, 393)
- Increased Plasma Level of Arginine Vasopressin, Associated with Body Fluid Balance and with Learning and Memory (Vol. 5: 366)
- Shārṅgadhara Samhitā as well as the other five Samhitās of Maharishi Āyur-Veda are the collection of results of research of thousands of years, true for all times.

22. Bhāva Prakāsha—ENLIGHTENING

- Growth of Higher States of Consciousness (Vol. 1: 7, 19, 99–104; Vol. 3: 216, 258, 284; Vol. 4: 312; Vol. 5: 395, 397)
- More Frequent Experiences of Higher States of Consciousness (Vol. 5: 397)
- Lower Incidence of Perceptual Illusion (Vol. 2: 131)
- Duration of Practice of the Transcendental Meditation and TM-Sidhi Programme Found to Be Correlated with Younger Biological Age (Vol. 3: 242, 245, 246)
- Improvements in Physical Health Positively Correlated with Duration and Regularity of Practice of the Transcendental Meditation Technique (Vol. 3: 247)
- Improvements in Mental Health Positively Correlated with Duration and Regularity of Practice of Maharishi's Transcendental Meditation Technique (Vol. 3: 247)

- Increased Order-Producing Activity of the Brain during Sleep (Vol. 5: 373)
- Healthier Behaviour: Decreased Use of Cigarettes, Alcohol, and Drugs (Vol. 1: 73, 79–86, 89, 90, 95; Vol. 2: 126, 150, 153, 161–163; Vol. 3: 239, 247, 276, 277, 280, 282, 283, 287; Vol. 4: 313; Vol. 5: 399)
- Decreased Lethargy (Vol. 2: 126, 147)
- Decreased Fatigue (Vol. 2: 147; Vol. 3: 238)
- Prevention of Psychiatric Illness (Vol. 2: 127)
- Bhāva-Prakāśh Saṁhitā as well as the other five Saṁhitās of Maharishi Āyur-Veda are the collection of results of research of thousands of years, true for all times.

24. Mādhava Nidāna—DIAGNOSING

- Improved Temperature Homeostasis (Vol. 1: 31)
- More Efficient Neuroendocrine Regulation (Vol. 5: 364)
- Normalization of Neuroendocrine Reactivity: Healthy Neuroendocrine Pattern in Type A Subjects Practising the Transcendental Meditation Technique (Vol. 5: 368)
- Improved Stress Reactivity: Lower Beta-Adrenergic Receptor Sensitivity; Lower Blood Pressure Reactivity to Stress; More Normal Resting Blood Pressure; Lower Resting Epinephrine Level (Vol. 5: 367)
- Hormone Levels Indicating Younger Biological Age (Vol. 5: 376)
- Lower Erythrocyte Sedimentation Rate Levels Indicating Less Serious Illness and Slower Ageing (Vol. 5: 377)
- Duration of Practice of Maharishi's Transcendental Meditation and TM-Sidhi Programme Found to Be Predictive of: Younger Physiological Age as Reflected in Levels of Systolic Blood Pressure and Auditory Threshold (Vol. 3: 245)
- Increased Stability and Sensitivity of Control of Hormone Levels (Vol. 3: 206; Vol. 5: 363, 364)
- Increased Endocrinological Efficiency: Lower Baseline Levels of Pituitary Hormones (TSH, Growth Hormone, and Prolactin) with Maintenance of Adrenal, Thyroid Hormone, and Insulin Levels in Long-Term Practitioners of the Transcendental Meditation Technique (Vol. 5: 363, 364)
- Benefits for Individuals with Allergies (Vol. 1: 2; Vol. 3: 238, 239)
- Fewer Infections (Vol. 1: 2; Vol. 3: 238, 239)
- Improved Auditory Thresholds (Vol. 1: 104; Vol. 3: 245, 246, 252; Vol. 4: 301, 302)
- Faster Reactions (Vol. 1: 45–47, 53; Vol. 2: 129; Vol. 3: 248, 251, 254, 257; Vol. 4: 301; Vol. 5: 358, 390)
- Improved Capacity for Selective Attention (Vol. 3: 251; Vol. 4: 300; Vol. 5: 380)
- Improved Auditory Discrimination (Vol. 1: 50; Vol. 2: 123, 128; Vol. 3: 256)
- Increased Perceptual Speed (Vol. 3: 257)
- Mādhav Nidān Saṁhitā as well as the other five Saṁhitās of Maharishi Āyur-Veda are the collection of results of research of thousands of years, true for all times.

25. Smṛiti—MEMORY

- Improved Memory (Vol. 1: 56, 58; Vol. 2: 132, 134, 136; Vol. 3: 257, 264)
- Spontaneous Organization of Memory (Vol. 1: 58; Vol. 2: 134, 136)
- Improved Stabilization of Organized Memory (Vol. 1: 58)
- Improved Right Hemisphere Functioning—Improved Tonal Memory (Vol. 2: 140)
- Improved Memory of Proper Physiological Function—Reduced Cancer Cell Growth Through Vedic Primordial Sound (H. Sharma, Freedom from Disease, 1993)
- Improved Memory of Proper Physiological Function—Unique Pattern of DNA Repair (Vol. 5: 360)

26. Purāṇa—ANCIENT and ETERNAL

- Benefits for the Elderly:
 - Increased Longevity (Vol. 4: 300; Vol. 5: 380);
 - Increased Cognitive and Perceptual Flexibility (Vol. 4: 300; Vol. 5: 380);
 - Increased Behavioural Flexibility (Vol. 4: 300; Vol. 5: 380);
 - Improved Mental Health (Vol. 4: 300; Vol. 5: 370, 371, 380, 395, 396);
 - More Ideal Levels of Blood Pressure (Vol. 4: 300; Vol. 5: 380)
- Multiple Improvements in Factors Most Closely Associated with Longevity: Cardiovascular Health, Work Satisfaction, Positive Health Habits, Physical Function, Happiness Rating, Self-Health Rating, Intelligence, and Mental Health (Improved Health of the Cardiovascular System (Vol. 1: 32–35, 62, 73, 80, 83–85, 90, 95, 96, 97; Vol. 2: 124–126, 130, 150, 153, 162, 163; Vol. 3: 202, 232, 233, 235, 236, 238, 239, 244–247, 282, 283, 287; Vol. 4: 300, 313; Vol. 5: 356, 357, 358, 367, 378, 380, 399)
- Greater Respect for Traditional Religious Values (Vol. 1: 71; Vol. 2: 138)

27. Itihās—BLOSSOMING OF TOTALITY

- Increased Leadership Ability, Persuasiveness, Forcefulness, and Influence (Vol. 1: 73; Vol. 2: 153)
- Increased Altruism (Vol. 1: 71, 73; Vol. 2: 138)
- Growth of a More Brave, Adventurous, Action-Oriented Nature (Vol. 1: 73)
- Increased Friendliness (Vol. 1: 65, 77; Vol. 3: 277, 290)
- Increased Ability to See Man as Essentially Good (Vol. 1: 76; Vol. 2: 153; Vol. 3: 266)
- Increased Good Humour (Vol. 1: 65, 77; Vol. 3: 277, 290; Vol. 4: 308)
- Enhanced Inner Well-Being (Vol. 2: 147; Vol. 4: 300, 310; Vol. 5: 380)
- Increased Contentment (Vol. 1: 65, 67, 77; Vol. 2: 150; Vol. 3: 277, 290; Vol. 4: 308)
- Increased Happiness (Vol. 1: 90; Vol. 2: 147, 165); Greater Marital Satisfaction: Greater Harmony, Greater Admiration of One's Spouse, Greater Agreement on Conduct (Vol. 2: 165)

28. Brāhmaṇa—STRUCTURING

- Greater Ability to Accomplish More with Less Effort (Vol. 2: 130, 164)
- Increased Productivity (Vol. 1: 96, 97)
- Greater Organizational Ability (Vol. 2: 164)
- Increased Effectiveness (Vol. 1: 65, 77; Vol. 2: 161; Vol. 3: 277)
- Increased Practicality and Realism (Vol. 2: 153)

29. Āraṇyak—STIRRING

- Increased EEG Coherence at the Moment of Performance of Maharishi's Transcendental Meditation Sidhi Technique of Yogic Flying (Vol. 1: 102; Vol. 5: 375)
- Increased Liveliness (Vol. 1: 65, 77; Vol. 3: 277, 290)
- Greater Initiative (Vol. 2: 164)
- Increased Resourcefulness (Vol. 2: 150)
- Increased Readiness for Activity (Vol. 1: 65; Vol. 2: 147)
- Decreased Tendency to Procrastinate (Vol. 1: 65, 77; Vol. 3: 277)
- Increased Enthusiasm for Work (Vol. 2: 150)

30. Upanishad—TRANSCENDENTAL and SELF-REFERRAL

- Growth of Inner Fulfilment Independent of Outside Stimulation (Vol. 3: 249)
- Increased Self-Sufficiency (Vol. 1: 65, 77; Vol. 2: 150, 153; Vol. 3: 277, 290; Vol. 4: 308)
- Increased Self-Reliance (Vol. 1: 65, 77; Vol. 2: 153; Vol. 3: 277)
- Increased Autonomy and Independence (Vol. 1: 62, 71; Vol. 2: 151, 153; Vol. 5: 395)
- Increased Inner-Directedness: Greater Independence and Self-Supportiveness (Vol. 1: 64, 69, 70, 72, 76, 94; Vol. 2: 139, 151, 153, 155; Vol. 3: 268)
- Increased Field Independence (Vol. 1: 51, 52, 103; Vol. 3: 255, 257, 259; Vol. 4: 307; Vol. 5: 384, 389)

31. Ṛk Veda Prātishākhya—ALL-PERVADING WHOLENESS

- Greater Intimacy (Vol. 2: 165)
- Greater Empathy (Vol. 2: 149)
- Increased Perceptual Flexibility (Vol. 1: 103; Vol. 3: 250, 253; Vol. 4: 300; Vol. 5: 380)
- Extended Maharishi Effect: Improved Quality of National Life as Measured by an Index Including Rate of Infectious Diseases, Infant Mortality Rate, Suicide Rate, Cigarette Consumption, Alcohol Consumption, Divorce Rate, Traffic Fatalities, Crime Rate, Percentage of Civil Cases Reaching Trial, Gross National Product, Patent Application Rate, and Number of Degrees Conferred (Vol. 4: 332)

32. Shukl-Yajur-Veda Prātishākhya—SILENCING, SHARING, and SPREADING

- Extended Maharishi Effect: Improved Quality of National Life, as Measured by Comprehensive Indices Comprising Many Variables (Vol. 4: 332, 333; Vol. 5: 401, 407, 408)
- Extended Maharishi Effect: Improved Quality of Provincial Life, as Measured by Comprehensive Indices Comprising Many Variables (Vol. 4: 321; Vol. 5: 401)
- Extended Maharishi Effect: Improved Quality of City Life, as Measured by a Comprehensive Index Comprising Many Variables (Vol. 4: 333)
- Increased Emotional Stability (Vol. 1: 65, 71, 77, 87, 93, 95; Vol. 2: 138, 150, 153, 158; Vol. 3: 241, 273, 277, 290; Vol. 4: 308)
- Increased Good-Naturedness, Friendliness, and Loyalty (Vol. 1: 73)
- Increased Tolerance (Vol. 1: 62, 65, 77; Vol. 2: 150, 153, 164; Vol. 3: 266, 268; Vol. 4: 308, 316)
- Improved Ability to Appreciate Others (Vol. 3: 271)
- Greater Respect for the Views of Others (Vol. 2: 164)
- Increased Consideration for Others (Vol. 1: 71, 73; Vol. 2: 153)
- Growth of a More Sympathetic, Helpful, and Caring Nature (Vol. 1: 73; Vol. 2: 153; Vol. 4: 316)

33. Kṛishṇ-Yajur-Veda Prātishākhya (Taittiriya)—OMNIPRESENT

- Increased Intrinsic Spirituality (Vol. 5: 395)
- Increased Unifying Ability, Autonomy, Intrinsic Spirituality, Creativity, Directness, Well-Being, and Integration of the Personality (Vol. 5: 395, 396)
- Greater Satisfaction with One's Relationship to God and Religion (Vol. 2: 156)

34. Sāma-Veda Prātishākhya (Pushpa Sūtram)—UNMANIFESTING THE PARTS BUT MANIFESTING THE WHOLE

- Increased Ability to See the Opposites of Life as Meaningfully Related (Vol. 1: 76)
- Improved Cognitive Flexibility (Vol. 3: 253; Vol. 4: 300; Vol. 5: 380)
- Greater Open-Mindedness: Greater Flexibility of Constructions of Reality (Vol. 2: 152)

35. Atharva Veda Prātishākhya—UNFOLDING

- Increased Physical and Mental Well-Being (Vol. 4: 308; Vol. 5: 380, 395)
- Increased Moral Maturity (Vol. 1: 91; Vol. 3: 265, 270; Vol. 4: 309)
- Increased Social Maturity (Vol. 2: 138; Vol. 3: 261)
- Greater Sense of Social Responsibility (Vol. 2: 138, 158)
- Correlations Found in Subjects Practising Maharishi's Transcendental Meditation and TM-Sidhi Programme:
 - Between High EEG Coherence, Levels of Creativity, and Experience of Transcendental Consciousness (Vol. 1: 21);
 - Between High EEG Coherence and High Levels of Creativity (Vol. 1: 102; Vol. 3: 216);

—Between Increased Frontal EEG Coherence and Increased Creativity (Vol. 4: 294);

—Between Duration of Practice of the Transcendental Meditation and TM-Sidhi Programme and Higher Levels of Creativity (Vol. 3: 257; Vol. 5: 392);

—Between Experiences of Higher States of Consciousness and Higher Levels of Creativity (Vol. 3: 258)

36. Atharva Veda Prātishākhya (Chaturadhyāyī)—DISSOLVING

• A Unique State of Deep Rest during the Transcendental Meditation Technique to Eliminate Stress and Promote Orderliness in Physiological Functioning:

—Decreased Metabolic Rate: Decreased Oxygen Consumption (Vol. 1: 1–4, 6, 7, 9; Vol. 2: 108, 130; Vol. 3: 205; Vol. 5: 357, 359);

—Decreased Carbon Dioxide Elimination (Vol. 1: 1–4, 6, 7, 9; Vol. 3: 205);

—Decreased Tidal Volume (Vol. 1: 9; Vol. 4: 293); —Decreased Minute Ventilation (Vol. 1: 1, 3, 4, 7; Vol. 2: 108; Vol. 3: 194, 205; Vol. 4: 293; Vol. 5: 359);

—Decreased Respiration Rate (Vol. 1: 2–5, 9, 10; Vol. 2: 108; Vol. 3: 197, 205);

—Periodic Breath Suspension (Vol. 1: 7, 8; Vol. 3: 197, 205, 213; Vol. 4: 293; Vol. 5: 358);

—Decreased Heart Rate (Vol. 1: 1–4, 6; Vol. 2: 108; Vol. 3: 197, 205; Vol. 4: 302; Vol. 5: 357);

—Reduced Difference between Arterial and Venous Carbon Dioxide Content in Forearm Metabolism (Vol. 5: 361);

—Reduced Metabolism in Muscle Tissue (Vol. 3: 207; Vol. 4: 291);

—Reduced Glucose Metabolism in Red Blood Cells (Vol. 2: 112; Vol. 3: 203; Vol. 4: 292; Vol. 5: 362);

—Reduction in Biochemical Indices of Stress:

—Decreased Arterial Lactate Levels (Vol. 1: 2–4; Vol. 3: 194, 203; Vol. 4: 291, 292);

—Decreased Plasma Cortisol Levels (Vol. 1: 12; Vol. 2: 109, 111; Vol. 3: 190, 191, 200, 202)

• Decreased Number of Situations in Life Perceived as Problems (Vol. 2: 142)

• Decreased Number of Serious Problems Experienced (Vol. 2: 142)

• Reduced Stress in Society Through the Maharishi Effect and Extended Maharishi Effect, as Indicated by:

—Decreased Suicide Rate (Vol. 4: 317, 323);

—Decreased Fires (Vol. 4: 333);

—Decreased Motor Vehicle Accidents and Fatalities (Vol. 4: 317, 323, 325, 327, 333, 337);

—Decreased Air Traffic Fatalities and Fatal Accidents (Vol. 4: 323, 337);

—Decreased Crime (Vol. 1: 98; Vol. 2: 166; Vol. 4: 318, 319, 320, 323, 325, 326, 328, 333, 334, 337; Vol. 5: 401, 402)

2. Personal Experience

Personal Experiences also Verify the Enlivenment of the 37 Values of Veda and the Vedic Literature in the Physiology

The first four verses of each of the 37 areas of Veda and the Vedic Literature have been experienced by those practising Maharishi's Transcendental Meditation and the TM-Sidhi Programme.

The experiences show that the practice of Maharishi's Transcendental Meditation and TM-Sidhi Programme enlivens those areas and aspects of the physiology that have been discovered to correspond to the 37 values of Veda and the Vedic Literature.

The structure and function of the physiology are normalized by the elimination of abnormalities, stress, and strain, and thus offer the benefits of their total potential, leading to perfect health, display of creativity, and all thought and action in tune with Natural Law—life free from mistakes.

Appendix II

Research in Consciousness

Maharishi Guides Research in Consciousness until the Structure of the Total Potential of Consciousness is Discovered in the Human Physiology (1957-1995)

- Maharishi introduces Transcendental Meditation in the world (1957).
- From 1957 to 1967, on the basis of the experiences of higher states of consciousness by the practitioners of Transcendental Meditation throughout the world, Maharishi explains the development of Transcendental Consciousness, Cosmic Consciousness, God Consciousness, and Unity Consciousness.
- In 1967, Maharishi introduces the Advanced Techniques of Transcendental Meditation to accelerate the development of higher states of consciousness.
- In 1976, the stabilization of the experience of higher states of consciousness is evident in the ability to function from the self-referral state of consciousness—Transcendental Consciousness—when Maharishi introduces the TM-Sidhi Programme leading to Yogic Flying.
- From 1976, the TM-Sidhi Programme of Yogic Flying demonstrates perfect mind-body co-ordination and produces the experience of bubbling bliss for the individual, (indicating maximum orderliness and integration of the brain functioning) and generates coherence, positivity, and harmony throughout the environment.
- From 1978, the collective performance of Yogic Flying is marked by decreased negative trends—stress and strain—in collective consciousness and increased coherence, integration, and harmony—happiness, prosperity, and fulfilment—throughout society.

Scientists call this phenomenon of increased harmony and positivity in the collective consciousness of the nation the Maharishi Effect (and Extended Maharishi Effect), in honour of Maharishi who had predicted this phenomenon as early as 1960.

- Maharishi brings to light the reality of collective consciousness in order to harness and fathom the unbounded resources of the nations by providing a simple procedure,—‘A Group for A Government’—a group of Yogic Flyers for each government, to eliminate stress, strain, and all negative tendencies from society as a whole (1992).

- Maharishi brings to light the relationship between individual consciousness, the collective consciousness of the nation, and the collective consciousness of the whole universe, and through his Vedic Science and Technology—Āyur-Veda, Gandharva Veda, Dhanur-Veda, Sthāpatya Veda, and Jyotish—provides the means to purify individual consciousness and aligns individual intelligence with Cosmic Intelligence, harnessing the infinite organizing power of Cosmic Intelligence on the level of individual consciousness (1993).
- Maharishi locates the total potential of Natural Law in the self-referral state of consciousness of the individual and provides practical programmes to gain mastery over Natural Law—spontaneous action according to Natural Law from this level of self-referral consciousness. Maharishi illustrates the authenticity of this theory and practice with Rk Veda 1.158.6 and Rk Veda 1.164.39.
- Harnessing this level of the infinite organizing power of Natural Law is further enhanced through Maharishi's programme of reading the Vedic Literature and enlivening the 37 qualities of consciousness—the structuring dynamics of Veda—in the human physiology (1994).

As the full range of consciousness has unfolded in theory and practice, its pure verbal expression in Veda and the Vedic Literature has been discovered to be the same as its physical expression in the human physiology.

Thus the total range of the infinite organizing power of Natural Law in human consciousness, in Veda and the Vedic Literature, and in the physiology, has been fathomed in principle and in practice.

Benefits of this programme for the individual and the whole nation are mentioned in Chapter VII.

References

150 Years of Research Uncovering the Structure and Function of the 37 Areas of Physiology Referred to in this 'Discovery of Veda and the Vedic Literature in Physiology'

Human anatomy and physiology (Ṛk Veda, Sāma Veda, Yajur-Veda, Atharva Veda, Sthāpatya Veda, Dhanur-Veda, Gandharva Veda):

- Aschoff, J. 1969. Desynchronization and resynchronization of human circadian rhythms. *Aerosp. Med.* 40:844-849.
- Barr, M. L., and Kiernan, J. A. 1988. *The Human Nervous System: An Anatomical Viewpoint*, 5th ed. Philadelphia: Lippincott.
- Borbély, A., and Valatx, J.-L. (eds.) 1984. *Sleep Mechanisms*. Exp. Brain Res. Suppl. 8. Berlin: Springer.
- Brown, A. G. 1981. *Organization in the Spinal Cord: The Anatomy and Physiology of Identified Neurons*. Springer-Verlag.
- Carpenter, M. B., and Sutin, J. 1983. *Human neuroanatomy*, 8th ed. Baltimore: Williams & Wilkins.
- Czeisler, C. A., Kronauer, R. E., Allan, J. S., Duffy, J. F., Jewett, M. E., Brown, E. N., and Ronda, J. M. 1989. Bright light induction of strong (type 0) resetting of the human circadian pacemaker. *Science* 244:1328-1333.
- Hastings, J. W., Rusak, B., and Boulos, Z. 1991. Circadian rhythms: The physiology of biological timing. In Prosser, C. L. (ed.), *Neural and Integrative Animal Physiology, Comparative Animal Physiology*, 4th ed. New York: Wiley-Liss, pp. 435-546.
- Hobson, J. A. 1988. *The Dreaming Brain*. New York: Basic Books.
- Kirby, D. A., and Verrier, R. L. 1989. Differential effects of sleep stage on coronary hemodynamic function. *Am. J. Physiol.* 256: H 1378-H 1383.
- Krueger, J. M., and Karnovsky, M. L. 1987. Sleep and the immune response. In B. D. Janković, B. M. Marković, and N. H. Spector (eds.), *Neuroimmune Interactions. Proceedings of the Second International Workshop on Neuroimmunomodulation*. Ann. N.Y. Acad. Sci. 496:510-516.
- Heimer, L. 1983. *The Human Brain and Spinal Cord: Functional Neuroanatomy and Dissection Guide*. New York: Springer.
- Hubel, D. H., and Wiesel, T. N. 1979. Brain mechanisms of vision. *Sci. Am.* 241 (3):150-162.
- Martin, J. H. 1989. *Neuroanatomy: Text and Atlas*. New York: Elsevier.
- Miller, J. M., and Towe, A. L. 1979. Audition: Structural and acoustical properties. In T. Ruch, and H. D. Patton (eds.), *Physiology and Biophysics*, Vol. 1: *The Brain and Neural Function*, 20th ed. Philadelphia: Saunders, pp. 339-375.

- Nauta, W. J. H., and Feirtag, M. 1986. *Fundamental Neuroanatomy*. New York: Freeman.
- Nieuwenhuys, R., Voogd, J., and van Huijzen, Chr. 1988. *The Human Central Nervous System: A Synopsis and Atlas*, 3rd rev. ed. Berlin: Springer.
- Noback, C. R., and Demarest, R. J. 1981. *The Human Nervous System: Basic Principles of Neurobiology*, 3rd ed. New York: McGraw-Hill.
- Penfield, W., and Rasmussen, T. 1950. *The Cerebral Cortex of Man: A Clinical Study of Localization of Function*. New York: Macmillan.
- Randall, W. C. (ed.) 1984. *Nervous Control of Cardiovascular Function*. New York: Oxford University Press.
- Rosenwasser, A. M. 1988. Behavioral neurobiology of circadian pacemakers: A comparative perspective. *Prog. Psychobiol. Physiol. Psychol.* 13:155-226.
- Rusak, B., Robertson, H. A., Wisden, W., and Hunt, S. P. 1990. Light pulses that shift rhythms induce gene expression in the suprachiasmatic nucleus. *Science* 248:1237-1240.
- Schmidt, R. F., and Thews, G. (eds.) 1989. *Human Physiology*, 2nd compl. rev. ed. M. A. Biederman-Thorson (trans.) Berlin: Springer.
- Sherrington, C. 1947. *The Integrative Action of the Nervous System*, 2nd ed. New Haven: Yale University Press.
- Steriade, M., and McCarley, R. W. 1990. *Brainstem Control of Wakefulness and Sleep*. New York: Plenum Press.
- Székel, G. 1963. Functional specificity of spinal cord segments in the control of limb movements. *Journal of Embryology and Experimental Morphology* 11:431-444.

Autonomic nervous system (Shikshā):

- Appenzeller, O. 1990. *The Autonomic Nervous System: An Introduction to Basic and Clinical Concepts*, 4th rev. and enl. ed. New York: Elsevier.
- Hutter, O. F., and Trautwein, W. 1956. Vagal and sympathetic effects on the pacemaker fibers in the sinus venosus of the heart. *J. Gen. Physiol.* 39:715-733.
- Karczmar, A. G., Koketsu, K., and Nishi, S. (eds.) 1986. *Autonomic and Enteric Ganglia: Transmission and its Pharmacology*. New York: Plenum Press.
- Loewy, A. D., and Spyer, K. M. (eds.) 1990. *Central Regulation of Autonomic Functions*. New York: Oxford University Press.
- Patton, H. D. 1989. The autonomic nervous system. In H. D. Patton, A. F. Fuchs, B. Hille, A. M. Scher, and R. Steiner (eds.), *Textbook of Physiology: Excitable Cells and Neurophysiology*, Vol. I, Section VII: Emotive Responses and Internal Milieu. Philadelphia: Saunders, pp. 737-758.
- Randall, W. C. (ed.) 1984. *Nervous Control of Cardiovascular Function*. New York: Oxford University Press.

Limbic system (Kalpa):

- Bard, P., and Mountcastle, V. B. 1948. Some forebrain mechanisms involved in expression of rage with special reference to suppression of angry behavior. *Res. Publ. Assoc. Res. Nerv. Ment. Dis.* 27:362-404.

Bernard, C. 1878-1879. *Leçons sur les phénomènes de la vie communs aux animaux et aux végétaux*, 2 Vols. Paris: Baillière.

Broca, P. 1878. Anatomie comparée de circonvolutions cérébrales. Le grand lobe limbique et la scissure limbique dans la série des mammifères. *Rev. Anthropol.* 1:385-498.

Isaacson, R. L. 1982. *The Limbic System*, second edition. Plenum Publishing Corp.

Milner, B. 1972. Disorders of learning and memory after temporal lobe lesions in man. *Clinical Neurosurgery* 19:421-446.

Nauta, W. J. H., and Domesick, V. B. 1981. Ramifications of the limbic system. In S. Matthysse (ed.), *Psychiatry and the Biology of the Human Brain*. Elsevier, North Holland: Biomedical Press.

Olds, J. 1975. Mapping the mind onto the brain. In F. G. Worden, J. P. Swazey, and G. Adelman (eds.), *The Neurosciences: Paths of Discovery*. Cambridge, Mass.: MIT Press.

Papez, J. W. 1937. A proposed mechanism of emotion. *American Medical Association Archives of Neurology and Psychiatry* 38:725-743.

Swanson, L. W. 1975. The Hippocampus. *Trends in Neurosciences* 2:9-12.

Willoughby, J. O., and Martin, J. B. 1978. The role of the limbic system in neuro-endocrine regulation. In K. E. Livingstone, and O. Hornykiewicz (eds.), *Limbic Mechanisms: The Continuing Evolution of the Limbic System Concept*. Plenum Publishing Corp.

Hypothalamus (Vyākaraṇa):

Gainer, H., 1988. Mechanisms of neuropeptide precursor processing. Implications for neuropharmacology. In M. Avoli, T. A. Reader, R. W. Dykes, and P. Gloor (eds.), *Neurotransmitters and Cortical Function: From Molecules to Mind*. New York: Plenum Press, pp. 527-546.

Gay, V. L. 1972. The hypothalamus: Physiology and clinical use of releasing factors. *Fertil. Steril.* 23:50-63.

Koizumi, K., Kollai, M., Oomura, Y., Yamashita, H., and Wayner, M. J. (eds.) 1988. The hypothalamus: Selected topics. *Brain Res. Bull.* 20:651-902.

Meyerson, B. J. 1979. Hypothalamic hormones and behaviour. Helsinki: Med. Biol. 57:69-83.

Nauta, W. J. H., and Haymaker, W. 1969. Hypothalamic nuclei and fiber connections. In W. Haymaker, E. Anderson, and W. J. H. Nauta (eds.), *The Hypothalamus*. Charles C. Thomas Pub.

Ranson, S. W. 1934. The hypothalamus: Its significance for visceral innervation and emotional expression. *Trans. Coll. Physicians Phila.* 2:222-242.

Reichlin, S. 1978. Introduction. In S. Reichlin, R. J. Baldessarini, and J. B. Martin (eds.), *The Hypothalamus*. Res. Publ. Assoc. Res. Nerv. Ment. Dis. 56:1-14.

Saper, C. B., Loewy, A. D., Swanson, L. W., and Cowan, W. M. 1976. Direct hypothalamo-autonomic connections. *Brain Research* 177:305-312.

Swanson, L. W., and Sawchenko, P. E. 1983. Hypothalamic integration: Organization of the paraventricular and supraoptic nuclei. *Annu. Rev. Neurosci.* 6:269-304.

Pituitary (Nirukta):

Du Vigneaud, V. 1956. Hormones of the posterior pituitary gland: Oxytocin and vasopressin. *Harvey Lect.* 50:1-26.

Gainer, H., 1988. Mechanisms of neuropeptide precursor processing. Implications for neuropharmacology. In M. Avoli, T. A. Reader, R. W. Dykes, and P. Gloor (eds.), *Neurotransmitters and Cortical Function: From Molecules to Mind*. New York: Plenum Press, pp. 527-546.

Guillemin, R. 1978. Control of adenohipophysial functions by peptides of the central nervous system. *Harvey Lect.* 71:71-131

Hans, G. W. 1955. Neural control of the pituitary gland. Monograph No. 3 of The Physiological Society. London: Arnold.

Hess, W. R. 1954. Diencephalon: Autonomic and Extrapyrarnidal Functions. New York: Grune & Stratton.

Renaud, L. P. 1981. A neurophysiological approach to the identification, connections and pharmacology of the hypothalamic tuberoinfundibular system. *Neuroendocrinology* 33:186-191.

Scharrer, E., and Scharrer, B. 1954. Hormones produced by neurosecretory cells. *Recent Prog. Horm. Res.* 10:183-232.

Transmitters (Chhanda):

Bennett, M. V. L., Barrio, L. C., Bargiello, T. A., Spray, D. C., Hertzberg, E., and Sáez, J. C. 1991. Gap junctions: New tools, new answers, new questions. *Neuron* 6:305-320.

Cooper, J. R., Bloom, F. E., and Roth, R. H. 1991. *The Biochemical Basis of Neuropharmacology*, 6th ed. New York: Oxford University Press.

Dale, H. 1935. Pharmacology and nerve-endings. *Proc. R. Soc. Med. (Lond.)* 28:319-332.

Eccles, J. C. 1976. From electrical to chemical transmission in the central nervous system. The closing address of the Sir Henry Dale, Centennial Symposium. *Notes Rec. R. Soc. Lond.* 30:219-230.

Edelman, G. M., Gall, W. E., and Cowan, W. M. (eds.) 1987. *Synaptic Function*. New York: Wiley.

Fatt, P. 1954. Biophysics of junctional transmission. *Physiol. Rev.* 34:674-710.

Hertzberg, E. L., Lawrence, T. S., and Gilula, N. B. 1981. Gap junctional communication. *Annu. Rev. Physiol.* 43:479-491.

Heuser, J. E., and Reese, T. S. 1977. Structure of the synapse. In E. R. Kandel (ed.), *Handbook of Physiology, Section 1: The Nervous System, Vol. 1. Cellular Biology of Neurons, Part 1*. Bethesda, MD: American Physiological Society, pp. 261-294.

Koob, G. F., Sandman, C. A., and Strand, F. L. (eds.) 1990. A decade of neuropeptides: Past, present and future. *Ann. N.Y. Acad. Sci.* 579:1-281.

Makowski, L., Caspar, D. L. D., Phillips, W. C., Baker, T. S., and Goodenough, D. A. 1984. Gap junction structures. VI. Variation and conservation in connection conformation and packing. *Biophys. J.* 45:208-218.

Ramón y Cajal, S. 1911. *Histologie du Système Nerveux de l'Homme et des Vertébrés*, Vol. 2. Azoulay, L. (trans.) Paris: Maloine. Republished 1955. Madrid: Instituto Ramón y Cajal.

Sherrington, C. 1947. *The Integrative Action of the Nervous System*, 2nd ed. New Haven: Yale University Press.

Unwin, N. 1989. The structure of ion channels in membranes of excitable cells. *Neuron* 3:665-676.

Basal ganglia and brain stem (Jyotish):

Bernstein, N. 1967. *The Co-ordination and Regulation of Movements*. Oxford: Pergamon Press.

Carpenter, M. B. 1981. Anatomy of the corpus striatum and brain stem integrating systems. In V. Brooks (ed.), *Handbook of Physiology*, Sect. 1, Vol. II. Motor Control. Washington, DC: American Physiological Society, Ch. 19, pp. 947-995.

Carpenter, M. B. 1987. Anatomy of the basal ganglia. In P. J. Vinken, G. W. Bruyn, and H. L. Klawans (eds.), *Handbook of Clinical Neurology*. New York: Elsevier Science publ., pp. 1-18.

Deecke, L., Scheid, P., and Kornhuber, H. H. 1969. Distribution of readiness potential, pre-motion positivity, and motor potential of the human cerebral cortex preceding voluntary finger movements. *Exp. Brain Res.* 7:158-168.

Dray, A. 1980. The physiology and pharmacology of mammalian basal ganglia. *Progress in Neurology* 14:221-335.

Garcia-Rill, E. 1986. The basal ganglia and the locomotor regions. *Brain Res. Rev.* 11:46-63.

Graybiel, A. M. 1984. Neurochemically specified subsystems in the basal ganglia. In D. Evered, and M. O'Connor (eds.), *Functions of the Basal Ganglia*. CIBA Foundation Symposium 107. London: Pitman, pp. 114-149.

Hepp-Reymond, M. C. 1988. Functional organization of motor cortex and its participation in voluntary movements. In H. D. Steklis, and J. Irwin (eds.), *Comparative Primate Biology*, Vol. 4. Neurosciences. New York: Liss, pp. 501-624.

Huntington, G. 1872. On chorea. *Med. Surg. Reporter* 26:317-321 .

Jackson, J. H. 1932. *Selected Writings of John Hughlings Jackson*, Vol. 2. Taylor, J. (ed.). London: Hodder & Stoughton.

Johnson, T. N., and Rosvold, H. E. 1971. Topographic projections on the globus pallidus and the substantia nigra of selectively placed lesions in the precommissural caudate nucleus and putamen in the monkey. *Exp. Neurol.* 33:584-596.

Kohlerman, N. J., Gibson, A. R., and Houk, J. C. 1982. Velocity signals related to hand movements recorded from red nucleus neurons in monkeys. *Science* 217:857-860.

Martin, J. B. 1984. Huntington's disease: New approaches to an old problem. *Neurology* 34:1059-1072.

Mountcastle, V. B., Lynch, J. C., Georgopoulos, A., Sakata, H., and Acuna, C. 1975. Posterior parietal association cortex of the monkey: Command functions for operations

within extrapersonal space. *J. Neurophysiol.* 38:871-908.

Nieuwenhuys, R., Voogd, J., and van Huijzen, Chr. 1981. *The Human Central Nervous System: A Synopsis and Atlas*, 2nd ed. Berlin: Springer.

Parkinson, J. 1817. *An Essay on the shaking palsy*. London.

Richter, E. 1965. *Die Entwicklung des Globus Pallidus und des Corpus Subthalamicum*. Berlin: Springer, pp. 131.

Sherrington, C. 1947. *The Integrative Action of the Nervous System*, 2nd ed. New Haven: Yale University Press.

Wise, S. P. 1985. The primate premotor cortex: Past, present, and preparatory. *Annu. Rev. Neurosci.* 8:1-19.

Woolsey, C. N. 1958. Organization of somatic sensory and motor areas of the cerebral cortex. In H. F. Harlow, and C. N. Woolsey (eds.), *Biological and Biochemical Bases of Behavior*. Madison: University of Wisconsin Press, pp. 63-81.

Thalamus (Nyāya):

Bentivoglio, M., Minciocchi, D., Molinari, M., Granto, A., Spreafico, R., and Macchi, G. 1988. The intrinsic and extrinsic organization of the thalamic intralaminar nuclei. In M. Bentivoglio, and R. Spreafico (eds.), *Cerebellar Thalamic Mechanisms*. Amsterdam: Excerpta Medica, pp. 221-237.

Boivie, J. 1978. Anatomical observations on the dorsal column nuclei, their thalamic projection, and the cytoarchitecture of some somatosensory thalamic nuclei in the monkey. *J. Comp. Neurol.* 178:17-48.

Burton, H., and Jones, E. G. 1976. The posterior thalamic region and its cortical projection in new world and old world monkeys. *J. Comp. Neurol.* 168:249-302.

Carmel, P. W. 1970. Efferent projections of the ventral anterior nucleus of the thalamus in the monkey. *Am. J. Anat.* 128:159-184.

Carpenter, M. B. 1989. Connectivity patterns of thalamic nuclei implicated in dyskinesia. *Stereotact. Funct. Neurosurg.* 58:79-119.

Carpenter, M. B., Nakano, K., and Kim, R. 1976. Nigrothalamic projections in the monkey demonstrated by autoradiographic techniques. *J. Comp. Neurol.* 144:93-116.

Hirai, T., and Jones, E. G. 1989. A new parcellation of the human thalamus on the basis of histochemical staining. *Brain Res. Rev.* 14:1-34.

Jones, E. G. 1985. *The Thalamus*. New York: Plenum Press, 935 pp.

Kaas, J. H. 1988. How the somatosensory thalamus is subdivided and interconnected with areas of the somatosensory cortex in monkeys. In M. Bentivoglio, and R. Spreafico (eds.), *Cerebellar Thalamic Mechanisms*. Amsterdam: Excerpta Medica, pp. 143-150.

Kievit, J., and Kuypers, H. G. J. M. 1977. Organization of the thalamocortical connections to the frontal lobe in the rhesus monkey. *Exp. Brain Res.* 29:299-322.

Krettek, J. E., and Price, J. L. 1974. A direct input from the amygdala to the thalamus and the cerebral cortex. *Brain Res.* 67:169-174.

Niimi, K., Niimi, M., and Okado, Y. 1978. Thalamic afferents to the limbic cortex

in the cat studied with the method of retrograde transport of horseradish peroxidase. *Brain Res.* 145:225-238.

Olszewski, J. 1952. *The Thalamus of the Macaca Mulatta*. Basel: S. Karger, 93 pp.

Pearson, R. C., Brodal, P., and Powell, T. P. S. 1978. The projection of the thalamus upon the parietal lobe in the monkey. *Brain Res.* 144:143-148.

Purpura, D. P. and Yahr, M. D. (eds.), *The Thalamus*. New York: Columbia University Press, pp. 109-127.

Scheibel, M. E., and Scheibel, A. B. 1966. The organization of the nucleus reticularis thalami: A golgi study. *Brain Res.* 1:43-62.

Scheibel, M. E., and Scheibel, A. B. 1966. The organization of the ventral anterior nucleus of the thalamus: A golgi study. *Brain Res.* 1:250-268.

Schell, G. R., and Strick, P. L. 1984. The origin of thalamic inputs to the arcuate premotor and supplementary motor areas. *J. Neurosci.* 4:539-560.

Walker, A. E. 1966. Internal structure and afferent-efferent relations of the thalamus. In D. P. Purpura, and M. D. Yahr (eds.), *The Thalamus*. New York: Columbia University Press, pp. 1-12.

Cerebellum (Vaisheshika):

Adams, R. D., and Victor, M. 1989. *Principles of Neurology*, 4th ed. New York: McGraw-Hill.

Brooks, V. B., and Thach, W. T. 1981. Cerebellar control of posture and movement. In V. B. Brooks (ed.), *Handbook of Physiology, Sect. I: The Nervous System. Vol. II: Motor Control*. Washington, D.C.: American Physiological Society, pp. 877-946.

Gilman, S. 1985. The cerebellum: Its role in posture and movement. In M. Swash, and C. Kennard (eds.), *Scientific Basis of Clinical Neurology*. New York: Churchill Livingstone.

Glickstein, M., and Yeo, C. 1990. The cerebellum and motor learning. *J. Cogn. Neurosci.* 2:69-80.

Ito, M. 1984. *The Cerebellum and Neural Control*. New York: Raven Press.

Keating, J. G., and Thach, W. T. 1990. Cerebellar motor learning: Quantization of movement adaptation and performance in rhesus monkeys and humans implicates cortex as the site of adaptation. *Soc. Neurosci. Abstr.* 16:762.

Keele, S. W., and Ivry, R. 1990. Does the cerebellum provide a common computation for diverse tasks? A timing hypothesis. *Ann. N.Y. Acad. Sci.* 608:179-211.

Thach, W. T., Kane, S. A., Mink, J. W., and Goodwin, H. P. 1991. Cerebellar output: Multiple maps and modes of control in movement coordination. In R. Llinás, and C. Sotelo (eds.), *The Cerebellum Revisited*. New York: Springer.

Neuronal activity (Sāṃkhya):

Bindman, L., and Lippold, O. 1981. *The Neurophysiology of the Cerebral Cortex*. Austin: University of Texas Press, 495 pp.

Brinkman, C., and Porter, R. 1983. Supplementary motor area and premotor area of

monkey cerebral cortex: Functional organization and activities of single neurons during performance of a learned movement. In J. C. Desmedt (ed.), *Motor Control Mechanisms in Health and Disease*. New York: Raven Press, pp. 393-420.

Campbell, A. W. 1905. *Histological Studies on the Localization of Cerebral Function*. New York: Cambridge University Press, 360 pp.

Economo, C. F. von 1929. *The Cytoarchitectonics of the Human Cerebral Cortex*. London: Oxford Medical Publications.

Hubel, D. H. 1963. The visual cortex of the brain. *Sci. Am.* 209:54-62.

Hubel, D. H., and Wiesel, T. N. 1974. Sequence regularity and geometry of orientation columns in the monkey striate cortex. *J. Comp. Neurol.* 158:267-294.

Jones, E. G. 1981. Anatomy of cerebral cortex: columnar input-output organization. In F. O. Schmitt, F. G. Worden, G. Adelman, and S. G. Dennis (eds.), *The Organization of the Cerebral Cortex*. Cambridge, Mass.: MIT Press, pp. 199-235.

Cerebral cortex; association fibres (Yoga):

Barr, M. L., and Kiernan, J. A. 1988. *The Human Nervous System: An Anatomical Viewpoint*, 5th ed. Philadelphia: Lippincott.

Bindman, L., and Lippold, O. 1981. *The Neurophysiology of the Cerebral Cortex*. Austin: University of Texas Press, pp. 495.

Brinkman, C. 1984. Supplementary motor area of the monkey's cerebral cortex: Short- and long-term deficits after unilateral ablation and the effects of subsequent callosal section. *J. Neurosci.* 4:918-929.

Brodal, A. 1981. *Neurological Anatomy in Relation to Clinical Medicine*, 3rd ed. New York: Oxford University Press.

Brodmann, K. 1909. *Vergleichende Lokalisationslehre der Großhirnrinde in ihren Prinzipien dargestellt auf Grund des Zellenbaues*. Leipzig: J. A. Barth. 324 pp.

Brugge, J. F., and Reale, R. A. 1985. Auditory cortex. In A. Peters, and E. G. Jones (eds.), *Cerebral Cortex*. New York: Plenum Press 4:229-271.

Bucy, P. C. 1949. Effects of extirpation in man. In P. C. Bucy (ed.), *The Precentral Motor Cortex*. Ed. 2. Urbana: University of Illinois Press, Ch. 14, pp. 353-394.

Burton, H. 1986. Second somatosensory cortex and related areas. In A. Peters, and E. G. Jones (eds.), *Cerebral Cortex*. New York: Plenum Press 5:31-98.

Campbell, A. W. 1905. *Histological Studies on the Localization of Cerebral Function*. New York: Cambridge University Press, 360 pp.

Diamond, I. T., Jones, E. G., and Powell, T. P. S. 1968. Interhemispheric fiber connections of the auditory cortex in the cat. *Brain Res.* 11:177-193.

Felleman, D. J., Nelson, R.J., and Kaas, J.H. 1983. Representations of the body surface in areas 3b and 1 of postcentral cortex of cebus monkeys. *Brain Res.* 268:15-26.

Geschwind, J., and Galaburda, A. M. 1984. *Cerebral Dominance: The Biological Foundation*. Cambridge, Mass.: Harvard University Press, 232 pp.

Geschwind, N., and Galaburda, A. M. 1987. *Cerebral Lateralization: Biological Mechanisms, Associations and Pathology*. Cambridge, Mass.: MIT Press, 283 pp.

- Heimer, L. 1983. *The Human Brain and Spinal Cord: Functional Neuroanatomy and Dissection Guide*. New York: Springer.
- Jones, E. G. 1981. Anatomy of cerebral cortex: columnar input-output organization. In F. O. Schmitt, F. G. Worden, G. Adelman, and S. G. Dennis (eds.), *The Organization of the Cerebral Cortex*. Cambridge, Mass.: MIT Press, pp. 199-235.
- Jones, E. G. 1986. Connectivity of primate sensory-motor cortex. In A. Peters, and E. G. Jones (eds.), *Cerebral Cortex*. New York: Plenum Press 5:113-183.
- Jones, E. G. 1987. Ascending inputs to, and internal organization of, cortical motor areas. In *Motor Areas of the Cerebral Cortex*, CIBA Foundation Symposium 132. Chichester: J. Wiley & Sons, pp. 21-39.
- Jones, E. G., Coulter, J. D., and Hendry, S. H. C. 1978. Intracortical connectivity of architectonic fields in the somatic sensory, motor and parietal cortex of monkeys. *J. Comp. Neurol.* 181:291-348.
- Jones, E. G., and Hendry, S. H. C. 1980. Distribution of callosal fibers around the hand representation in monkey somatic sensory cortex. *Neurosci. Lett.* 19:167-172.
- Konishi, M., and Knudsen, E. I. 1982. A theory of neural auditory space. In C. N. Woolsey (ed.), *Cortical Sensory Organization 3*. Clifton, New Jersey: Humana Press, pp. 219-229.
- Martin, J. H. 1989. *Neuroanatomy: Text and Atlas*. New York: Elsevier.
- Nauta, W. J. H., and Feirtag, M. 1986. *Fundamental Neuroanatomy*. New York: Freeman.
- Noback, C. R., and Demarest, R. J. 1981. *The Human Nervous System: Basic Principles of Neurobiology*, 3rd ed. New York: McGraw-Hill.
- Penfield, W., and Rasmussen, T. 1950. *The Cerebral Cortex of Man: A Clinical Study of Localization of Function*. New York: Macmillan.
- Powell, T. P. S. and Mountcastle, V. B. 1959. The cytoarchitecture of the postcentral gyrus of the monkey *Macaca mulatta*. *Bull. Johns Hopkins Hosp.* 105:108-131.
- Schmidt, R. F., and Thews, G. (eds.) 1989. *Human Physiology*. 2nd compl. rev. ed. M. A. Biederman-Thorson (trans.) Berlin: Springer.
- Sherrington, C. 1947. *The Integrative Action of the Nervous System*, 2nd ed. New Haven: Yale University Press.
- Sperry, R. W. 1974. Lateral specialization in the surgically separated hemispheres. In F. O. Schmitt, and F. G. Worden (eds.), *The Neurosciences, Third Study Program*. Cambridge, Mass.: MIT Press, pp. 5-19.
- Zangwill, O. L. 1960. *Cerebral Dominance and Its Relation to Psychological Function*. Springfield, IL: Charles C. Thomas.

Central nervous system (Karma Mimāṃsa):

- Barr, M. L., and Kiernan, J. A. 1988. *The Human Nervous System: An Anatomical Viewpoint*, 5th ed. Philadelphia: Lippincott.
- Brodal, A. 1981. *Neurological Anatomy in Relation to Clinical Medicine*, 3rd ed. New York: Oxford University Press.

- Cowan W. M. 1979. The development of the brain. *Sci. Am.* 241 (3):112-133.
- Heimer, L. 1983. *The Human Brain and Spinal Cord: Functional Neuroanatomy and Dissection Guide*. New York: Springer.
- Keynes, R., and Lumsden, A. 1990. Segmentation and the origin of regional diversity in the vertebrate central nervous system. *Neuron* 4:1-9.
- Martin, J. H. 1989. *Neuroanatomy: Text and Atlas*. New York: Elsevier.
- Nauta, W. J. H., and Feirtag, M. 1986. *Fundamental Neuroanatomy*. New York: Freeman.
- Noback, C. R., and Demarest, R. J. 1981. *The Human Nervous System: Basic Principles of Neurobiology*, 3rd ed. New York: McGraw-Hill.
- Schmidt, R. F., and Thews, G. (eds.) 1989. *Human Physiology*. 2nd compl. rev. ed. M. A. Biederman-Thorson (trans.) Berlin: Springer.
- Schoenwolf, G. C., and Smith J. L. 1990. Mechanisms of neurulation: Traditional viewpoint and recent advances. *Development* 109:243-270.

Integrated physiology (Vedānta):

- Aschoff, J. 1969. Desynchronization and resynchronization of human circadian rhythms. *Aerosp. Med.* 40:844-849.
- Barr, M. L., and Kiernan, J. A. 1988. *The Human Nervous System: An Anatomical Viewpoint*, 5th ed. Philadelphia: Lippincott.
- Borbély, A., and Valatx, J.-L. (eds.) 1984. *Sleep Mechanisms*. *Exp. Brain Res. Suppl.* 8. Berlin: Springer.
- Brown, A. G. 1981. *Organization in the Spinal Cord: The Anatomy and Physiology of Identified Neurons*. Springer-Verlag.
- Carpenter, M. B., and Sutin, J. 1983. *Human Neuroanatomy*, 8th ed. Baltimore: Williams & Wilkins.
- Czeisler, C. A., Kronauer, R. E., Allan, J. S., Duffy, J. F., Jewett M. E., Brown, E. N., and Ronda, J. M. 1989. Bright light induction of strong (type 0) resetting of the human circadian pacemaker. *Science* 244:1328-1333.
- Hastings, J. W., Rusak, B., and Boulos, Z. 1991. Circadian rhythms: The physiology of biological timing. In C. L. Prosser (ed.), *Neural and Integrative Animal Physiology, Comparative Animal Physiology*, 4th ed. New York: Wiley-Liss, pp. 435-546.
- Heimer, L. 1983. *The Human Brain and Spinal Cord: Functional Neuroanatomy and Dissection Guide*. New York: Springer.
- Hobson, J. A. 1988. *The Dreaming Brain*. New York: Basic Books.
- Hubel, D. H., and Wiesel, T. N. 1979. Brain mechanisms of vision. *Sci. Am.* 241 (3):150-162.
- Kirby, D. A., and Verrier, R. L. 1989. Differential effects of sleep stage on coronary hemodynamic function. *Am. J. Physiol.* 256: H 1378-H 1383.
- Krueger, J. M., and Karnovsky, M. L. 1987. Sleep and the immune response. In B. D. Janković, B. M. Marković, and N. H. Spector (eds.), *Neuroimmune Interactions*. Pro-

ceedings of the Second International Workshop on Neuroimmunomodulation. Ann. N.Y. Acad. Sci. 496:510-516.

Martin, J. H. 1989. *Neuroanatomy: Text and Atlas*. New York: Elsevier.

Miller, J. M., and Towe, A. L. 1979. Audition: Structural and acoustical properties. In T. Ruch, and H. D. Patton (eds.), *Physiology and Biophysics*, Vol. 1. The Brain and Neural Function, 20th ed. Philadelphia: Saunders, pp. 339-375.

Nauta, W. J. H., and Feirtag, M. 1986. *Fundamental Neuroanatomy*. New York: Freeman.

Nieuwenhuys, R., Voogd, J., and van Huijzen, Chr. 1988. *The Human Central Nervous System: A Synopsis and Atlas*, 3rd rev. ed. Berlin: Springer.

Noback, C. R., and Demarest, R. J. 1981. *The Human Nervous System: Basic Principles of Neurobiology*, 3rd ed. New York: McGraw-Hill.

Penfield, W., and Rasmussen, T. 1950. *The Cerebral Cortex of Man: A Clinical Study of Localization of Function*. New York: Macmillan.

Randall, W. C. (ed.) 1984. *Nervous Control of Cardiovascular Function*. New York: Oxford University Press.

Rosenwasser, A. M. 1988. Behavioral neurobiology of circadian pacemakers: A comparative perspective. *Prog. Psychobiol. Physiol. Psychol.* 13:155-226.

Rusak, B., Robertson, H. A., Wisden, W., and Hunt, S. P. 1990. Light pulses that shift rhythms induce gene expression in the suprachiasmatic nucleus. *Science* 248:1237-1240.

Schmidt, R. F., and Thews, G. (eds.) 1989. *Human Physiology*. 2nd compl. rev. ed. M. A. Biederman-Thorson (trans.) Berlin: Springer.

Sherrington, C. 1947. *The Integrative Action of the Nervous System*, 2nd ed. New Haven: Yale University Press.

Steriade, M., and McCarley, R. W. 1990. *Brainstem Control of Wakefulness and Sleep*. New York: Plenum Press.

Székely, G. 1963. Functional specificity of spinal cord segments in the control of limb movements. *Journal of Embryology and Experimental Morphology* 11:431-444.

Cell nucleus (Bhāva Prakāśh); cytoplasm and cytoskeleton (Shārngadhara); cell membrane (Mādhava Nidāna):

Almers, W., and Stirling, C. 1984. Distribution of transport proteins over animal cell membranes. *J. Membr. Biol.* 77:169.

Balaban, R. S. 1984. The application of nuclear magnetic resonance to the study of cellular physiology. *Am. J. Physiol.* 246:C10.

Bershadsky, A. D., and Vasiliev, J. M. 1988. *Cytoskeleton*. New York: Plenum Publishing Corporation.

Bettger, W. J., and McKeehan, W. L. 1986. Mechanisms of cellular nutrition. *Physiol. Rev.* 66:1.

Bohr, D. F. 1989. Cell membrane in hypertension. *News in Physiol. Sci.* 4:85.

- Boyd, A., and Simon, M. 1982. Bacterial chemotaxis. *Annu. Rev. Physiol.* 44:501.
- Chien, S. (ed.) 1988. *Molecular Biology in Physiology*. New York: Raven Press.
- Correia, J. J., and Williams, R. C., Jr. 1983. Mechanisms of assembly and disassembly of microtubules. *Annu. Rev. Biophys. Bioeng.* 12:211.
- DeMello, W. C. (ed.) 1987. *Cell-to-Cell Communication*. New York: Plenum Publishing Corporation.
- Fawcett, D. W. 1986. *Bloom & Fawcett: A Textbook of Histology*. 11th ed. Philadelphia: W. B. Saunders Co.
- Fawcett, D. W. 1981. *The Cell*. 2nd ed. Philadelphia: W. B. Saunders Co.
- Fitzgerald, P. G. 1988. Gap junction heterogeneity in liver, heart, and lens. *News in Physiol. Sci.* 3:206.
- Frankel, R. B. 1984. Magnetic guidance of organisms. *Annu. Rev. Biophys. Bioeng.* 13:85.
- Goldstein, D. B. 1984. The effects of drugs on membrane fluidity. *Annu. Rev. Pharmacol. Toxicol.* 24:43.
- Hoffman, E. K., and Simonsen, L. O. 1989. Membrane mechanisms in volume and pH regulation in vertebrate cells. *Physiol. Rev.* 69:315.
- Holtzman, E. 1989. *Lysosomes*. New York: Plenum Publishing Corporation.
- Hubbard, A. L., et al. 1989. Biogenesis of endogenous plasma membrane proteins in epithelial cells. *Ann. Rev. Physiol.* 51:755.
- Kornfeld, S. 1987. Trafficking of lysosomal enzymes. *FASEB J.* 1:462.
- Kudlow, J. E., et al. (eds.) 1988. *Biology of Growth Factors*. New York: Plenum Publishing Corporation.
- Lane, M. D., et al. 1986. The mitochondrion updated. *Science* 234:626.
- Lemasters, J. J., et al. (eds.) 1988. *Integration of Mitochondrial Function*. New York, Plenum Publishing Corporation.
- Machlin, L. J., and Bendich, A. 1987. Free radical tissue damage: Protective role of antioxidant nutrients. *FASEB J.* 1:441.
- Malhotra, S. K. 1983. *The Plasma Membrane*. New York: John Wiley & Sons.
- McCloskey, M., and Poo, M. M. 1984. Protein diffusion in cell membranes: Some biological implications. *Int. Rev. Cytol.* 87:19.
- Moore, A. L., and Beechey, R. B. (eds.) 1987. *Plant Mitochondria*. New York: Plenum Publishing Corporation.
- Porter, K. R., and Bonneville, M. A. 1973. *Fine Structure of Cells and Tissues*. 4th ed. Philadelphia: Lea & Febiger.

- Rodriguez-Boulán, E., and Salas, P. J. I. 1989. External and internal signals for epithelial cell surface polarization. *Ann. Rev. Physiol.* 61:741.
- Schachter, D. 1984. Fluidity and function of hepatocyte plasma membranes. *Hepatology* 4:140.
- Sowers, A. E. (ed.) 1987. *Cell Fusion*. New York: Plenum Publishing Corporation.
- Thomas, K. A. 1987. Fibroblast growth factors. *FASEB J.* 1:434.
- Van der Laarse, W. J., et al. 1989. Energetics at the single cell level. *News in Physiol. Sci.* 4:91.
- Wade, J. B. 1986. Role of membrane fusion in hormonal regulation of epithelial transport. *Ann. Rev. Physiol.* 48:213.
- Wall, D. A., and Maack, T. 1986. Endocytic uptake, transport, and catabolism of proteins by epithelial cells. *Am. J. Physiol.* 248:C12.
- Wheatley, D. N. 1986. On the possible importance of an intracellular circulation. *Life-Sci.* 36:299.
- Willingham, M. C., and Pastan, I. 1984. Endocytosis and exocytosis: Current concepts of vesicle traffic in animal cells. *Int. Rev. Cytol.* 92:61.

Memory systems and reflexes (Smṛiti); great intermediate net (Pūrāṇa); voluntary motor and sensory projections (Itihāsa):

- Angevine, J. B., Jr., and Cotman, C. W. 1981. *Principles of Neuroanatomy*. New York: Oxford University Press.
- Brodal, A. 1940. Experimentelle Untersuchungen über die olivocerebellare Lokalisation. *Z. gesamte Neurol. Psychiat.* 169:1-153.
- Carleton, S. C., and Carpenter, M. B. 1983. Afferent and efferent connections of the medial, inferior, and lateral vestibular nuclei in cat and monkey. *Brain Res.* 278:29-51.
- Carpenter, M. B., and Sutin, J. 1983. *Human Neuroanatomy*, Ed. 8. Baltimore: Williams & Wilkins.
- Hunt, S. P. 1983. Cytochemistry of the spinal cord. In P. C. Emson (ed.), *Chemical Neuroanatomy*. New York: Raven Press, pp. 53-84.
- Jones, E. G., and Wise, S. P. 1977. Size, laminar and columnar distribution of efferent cells in the sensory-motor cortex of monkeys. *J. Comp. Neurol.* 175:391-438.
- Kalia, M., and Mesulam, M. M. 1980. Brain stem projections of sensory and motor components of the vagus complex in the cat. II. Laryngeal tracheobronchial, pulmonary, cardiac, and gastrointestinal branches. *J. Comp. Neurol.* 193:467-508.
- Loewy, A. D., and Burton, H. 1978. Nuclei of the solitary tract: Efferent projections to the lower brain stem and spinal cord of the cat. *J. Comp. Neurol.* 181:421-450.
- Loewy, A. D., Saper, C. B., and Yamodis, N. D. 1978. Re-evaluation of the efferent projections of the Edinger-Westphal nucleus. *Brain Res.* 141:153-159.
- Mcgeer, P. L., Eccles, J. C., and Mcgeer, E. G. 1987. *Molecular Neurobiology of the*

Mammalian Brain, Ed. 2. New York: Plenum Press.

Olszewski, J., and Baxter, D. 1954. Cytoarchitecture of the Human Brain Stem. Philadelphia: J. B. Lippincott.

Rexed, B. 1954. A cytoarchitectonic atlas of the spinal cord in the cat. *J. Comp. Neurol.* 100:297-400.

Descending tracts (Brāhmaṇa), fasciculi proprii (Āraṇyaka), ascending tracts (Upanishad):

Akaike, T. 1983. Neuronal organization of the vestibulospinal system in the cat. *Brain Res.* 259:217-227.

Albe-Fessard, D., Levante, A., and Lamour, Y. 1974. Origin of spinothalamic tract in monkeys. *Brain Res.* 65:503-509.

Apkarian, A. V., and Hodge, C. J. 1989. Primate spinothalamic pathways: I. A quantitative study of the cells of origin of the spinothalamic pathway. *J. Comp. Neurol.* 288:447-473.

Asanuma, H., Zarzecki, P., Jankowska, E., Hongo, T., and Marcus, S. 1979. Projection of individual pyramidal tract neurons to lumbar motoneuron pool of the monkey. *Exp. Brain Res.* 34:73-89.

Carpenter, M. B., Stein, B. M., and Shriver, J. E. 1968. Central projections of spinal dorsal roots in the monkey. II. Lower thoracic, lumbosacral, and coccygeal dorsal roots. *Am. J. Anat.* 123:75-118.

Grillner, S., Hongo, T., and Lund, S. 1969. Descending monosynaptic and reflex control of gamma-motoneurons. *Acta Physiol. Scand.* 75:592-614.

Grillner, S., Hongo, T., and Lund, S. 1970. The vestibulospinal tract. Effects on alpha-motoneurons in the lumbosacral spinal cord in the cat. *Exp. Brain Res.* 10:94-120.

Hartmann-von Monakow, K., Akert, K., and Künzle, H. 1979. Projections of the pre-central and premotor cortex to the red nucleus and other midbrain areas in *Macaca fascicularis*. *Exp. Brain Res.* 34:91-105.

Matsushita, M. 1988. Spinocerebellar projections from the lowest lumbar and sacral-caudal segments in the cat, as studied by anterograde transport of wheat germ agglutinin-horse-radish peroxidase. *J. Comp. Neurol.* 274:23-254.

Nyberg-Hansen, R. 1966. Functional organization of descending supraspinal fibre system to the spinal cord: Anatomical observations and physiological correlations. *Ergeb. Anat. Entwicklungsgesch.* 39:1-48.

Oscarsson, O. 1965. Functional organization of the spino- and cuneocerebellar tracts. *Physiol. Rev.* 45:495-522.

Rossi, G. F., and Brodal, A. 1956. Corticofugal fibers to the brain stem reticular formation: An experimental study in the cat. *J. Anat.* 90:42-62.

Saper, C. B., Loewy, A. D., Swanson, L. W., and Cowan, W. M. 1976. Direct hypothalamo-automatic connections. *Brain Res.* 117:305-312.

Schwindt, P. C. 1981. Control of motoneuron output by pathways descending from the brain stem. In A. L. Towe, and E. S. Luschei (eds.), *Handbook of Behavioral Neurobiology, Motor Coordination*, Vol. 5. New York: Plenum Press, pp. 139-230.

Wholeness (Prātishākyā):

- Barr, M. L., and Kiernan, J. A. 1988. *The Human Nervous System: An Anatomical Viewpoint*, 5th ed. Philadelphia: Lippincott.
- Bindman, L., and Lippold, O. 1981. *The Neurophysiology of the Cerebral Cortex*. Austin: University of Texas Press, pp. 495.
- Brinkman, C. 1984. Supplementary motor area of the monkey's cerebral cortex: Short- and long-term deficits after unilateral ablation and the effects of subsequent callosal section. *J. Neurosci.* 4:918-929.
- Brodal, A. 1981. *Neurological Anatomy in Relation to Clinical Medicine*, 3rd ed. New York: Oxford University Press.
- Brodmann, K. 1909. Vergleichende Lokalisationslehre der Großhirnrinde in ihren Prinzipien dargestellt auf Grund des Zellenbaues. Leipzig: J. A. Barth. 324 pp.
- Brugge, J. F., and Reale, R. A. 1985. Auditory cortex. In A. Peters, and E. G. Jones (eds.), *Cerebral Cortex*. New York: Plenum Press, 4:229-271.
- Bucy, P. C. 1949. Effects of extirpation in man. In P. C. Bucy (ed.), *The Precentral Motor Cortex*. Ed. 2. Urbana: University of Illinois Press, Ch. 14, pp. 353-394.
- Burton, H. 1986. Second somatosensory cortex and related areas. In A. Peters, and E. G. Jones (eds.), *Cerebral Cortex*. Plenum Press, New York, 5:31-98.
- Campbell, A. W. 1905. *Histological Studies on the Localization of Cerebral Function*. New York: Cambridge University Press, 360 pp.
- Diamond, I. T., Jones, E. G., and Powell, T. P. S. 1968. Interhemispheric fiber connections of the auditory cortex in the cat. *Brain Res.* 11:177-193.
- Felleman, D.J., Nelson, R. J., and Kaas, J. H. 1983. Representations of the body surface in areas 3b and 1 of postcentral cortex of cebus monkeys. *Brain Res.* 268:15-26.
- Geschwind, J., and Galaburda, A. M. 1984. *Cerebral Dominance: The Biological Foundation*. Cambridge, Mass.: Harvard University Press, 232 pp.
- Geschwind, N., and Galaburda, A. M. 1987. *Cerebral Lateralization: Biological Mechanisms, Associations, and Pathology*. Cambridge, Mass.: MIT Press, 283 pp.
- Heimer, L. 1983. *The Human Brain and Spinal Cord: Functional Neuroanatomy and Dissection Guide*. New York: Springer.
- Jones, E. G. 1981. Anatomy of cerebral cortex: Columnar input-output organization. In F. O. Schmitt, F. G. Worden, G. Adelman, and S. G. Dennis (eds.), *The Organization of the Cerebral Cortex*. Cambridge, Mass.: MIT Press, pp. 199-235.
- Jones, E. G. 1986. Connectivity of primate sensory-motor cortex. In E. G. Jones and A. Peters (eds.), *Cerebral Cortex*. New York: Plenum Press, 5:113-183.
- Jones, E. G. 1987. Ascending inputs to, and internal organization of, cortical motor areas. In *Motor Areas of the Cerebral Cortex*, CIBA Foundation Symposium 132. Chichester: J. Wiley & Sons, 21-39.
- Jones, E. G., Coulter, J. D., and Hendry, S. H. C. 1978. Intracortical connectivity of architectonic fields in the somatic sensory, motor, and parietal cortex of monkeys. *J. Comp. Neurol.* 181:291-348.

- Jones, E. G., and Hendry, S. H. C. 1980. Distribution of callosal fibers around the hand representation in monkey somatic sensory cortex. *Neurosci. Lett.* 19:167-172.
- Konishi, M., and Knudsen, E. I. 1982. A theory of neural auditory space. In C. N. Woolsey (ed.), *Cortical Sensory Organization*. Clifton, NJ: Humana Press, 3:219-229.
- Martin, J. H. 1989. *Neuroanatomy: Text and Atlas*. New York: Elsevier.
- Nauta, W. J. H., and Feirtag, M. 1986. *Fundamental Neuroanatomy*. New York: Freeman.
- Noback, C. R., and Demarest, R. J. 1981. *The Human Nervous System: Basic Principles of Neurobiology*, 3rd ed. New York: McGraw-Hill.
- Penfield, W., and Rasmussen, T. 1950. *The Cerebral Cortex of Man: A Clinical Study of Localization of Function*. New York: Macmillan.
- Powell, T. P. S. and Mountcastle, V. B. 1959. The cytoarchitecture of the postcentral gyrus of the monkey *Macaca mulatta*. *Bull. Johns Hopkins Hosp.* 105:108-131.
- Schmidt, R. F., and Thews, G. (eds.) 1989. *Human Physiology*. 2nd compl. rev. ed. M. A. Biederman-Thorson (trans.) Berlin: Springer.
- Sherrington, C. 1947. *The Integrative Action of the Nervous System*, 2nd ed. New Haven: Yale University Press.
- Sperry, R. W. 1974. Lateral specialization in the surgically separated hemispheres. In F. O. Schmitt and F. G. Worden (eds.), *The Neurosciences, Third Study Program*. Cambridge, Mass.: MIT Press, pp. 5-19.
- Zangwill, O. L. 1960. *Cerebral Dominance and Its Relation to Psychological Function*. Springfield: Charles C. Thomas.

Appendix IV

Ongoing and Future Research

In the past 38 years, discoveries in the field of consciousness by His Holiness Maharishi Mahesh Yogi have revealed the inner dynamics of the self-referral state of pure consciousness, which creates from within itself all the diverse manifestations in the universe. The fluctuations of this field of pure intelligence have been discovered by Maharishi to have a structure which is expressed in verbal form in Veda, while its structuring dynamics are expressed in the Vedic Literature (see Appendix II).

The world-wide application of Maharishi's Vedic Science and Technology by millions of people has led to a transformation in the world's collective consciousness and an awakening to the deeper, hidden values at the basis of the entire manifest creation.

At the same time, the efforts of modern science for the last 150 years yielded a profound understanding of the structure and function of the physiology.

The discovery that human physiology is Veda was based on the findings of these two systematic avenues of exploration in the field of knowledge; the first research question that was asked was: which part of the human anatomy and physiology fulfils what function, corresponding to which of the 37 aspects of Veda and the Vedic Literature?

As this basic question started to be answered, it became clear that the two expressions of Natural Law, verbal (Veda) and material (the human body), had identical functional schemes. The various functions of the branches of the Vedic Literature fit beautifully with the functions of different organs of the physiology, particularly the different parts of the nervous system. Also, the dynamics of the relationships between different aspects within the Vedic Literature corresponded to the intricate dynamics of the relationships between the different aspects of the physiology.

Great confidence in the identity of the functional design of these two aspects of pure knowledge (intelligence and matter—Veda and physiology) emerged from this first phase of research.

The next step was to compare the actual structures of the components that were discovered to be similar in function. It was a great revelation to discover that the structure of the 37 aspects of Veda and the Vedic Literature had exactly a one to one correspondence with the structures of the 37 aspects of the physiology related to them as described in this book. For example, whenever there were five, ten, or thirteen chapters in one specific branch of the Vedic Literature, exactly five, ten, and thirteen divisions of the homologous organ or structure in the physiology were

found. It became even more astounding to discover that the subdivisions of the chapters or books corresponded to the subdivisions of the related structures in the physiology. In some cases it was possible to find correspondence at even the fourth or fifth levels of subdivisions.

Research is continuing to determine all the various levels of correlation. Since the number of components involved, at the finer levels of consideration, are in the millions, we feel that this discovery opens the door for an almost endless field of research. Such researches would require the involvement of a large number of scholars inspired to uncover the structuring dynamics of life and creation based on this new avenue of research.

More scientific knowledge will unfold and a greater understanding of the functions of specific components of the physiology will be revealed. Maharishi Vedic scientists will continue to explore and update the fine relationships between the structure and function of pure knowledge available in Veda and the Vedic Literature and its manifestations in matter; not only in the human physiology but also in every aspect of creation, including flora, fauna, the fabrics of society, and beyond our planet to the galactic and cosmic life.

Research will also continue to unfold the benefits of the application of this knowledge in every field of human interest; but we feel that the mechanics of creation have become clear to us and its applications to create perfection in the life of every individual and every nation are now at hand.

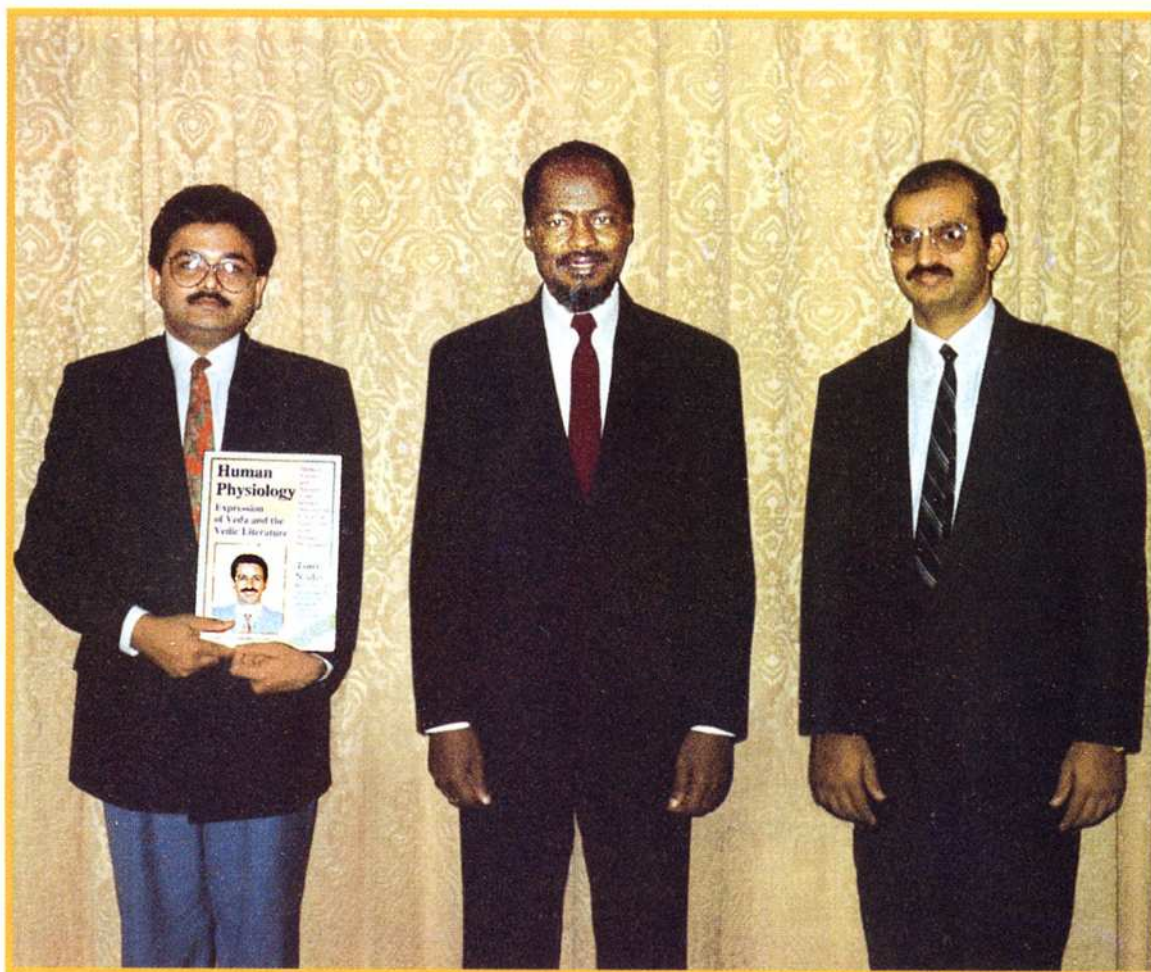
The President of India Releases Dr Tony Nader's Book to the World



His Excellency Sri Dr Shankar Dayal Sharma, President of India, Land of the Veda, receiving *Human Physiology—Expression of Veda and the Vedic Literature* from the author, Dr Tony Nader, International President of Maharishi Ayur-Veda Universities.

Following the meeting on 15 March 1994, the President released the book to the world.

**The President
of the Republic of Mozambique
Welcomes Dr Tony Nader's Discovery**



His Excellency Dr Joaquim Alberto Chissano Rāma, President of the Republic of Mozambique, receiving *Human Physiology—Expression of Veda and the Vedic Literature* from Dr Manoj Gulhane (left) and Dr Ajit Varma (right).

**The President
of the Republic of Lebanon
Welcomes Dr Tony Nader's Discovery**



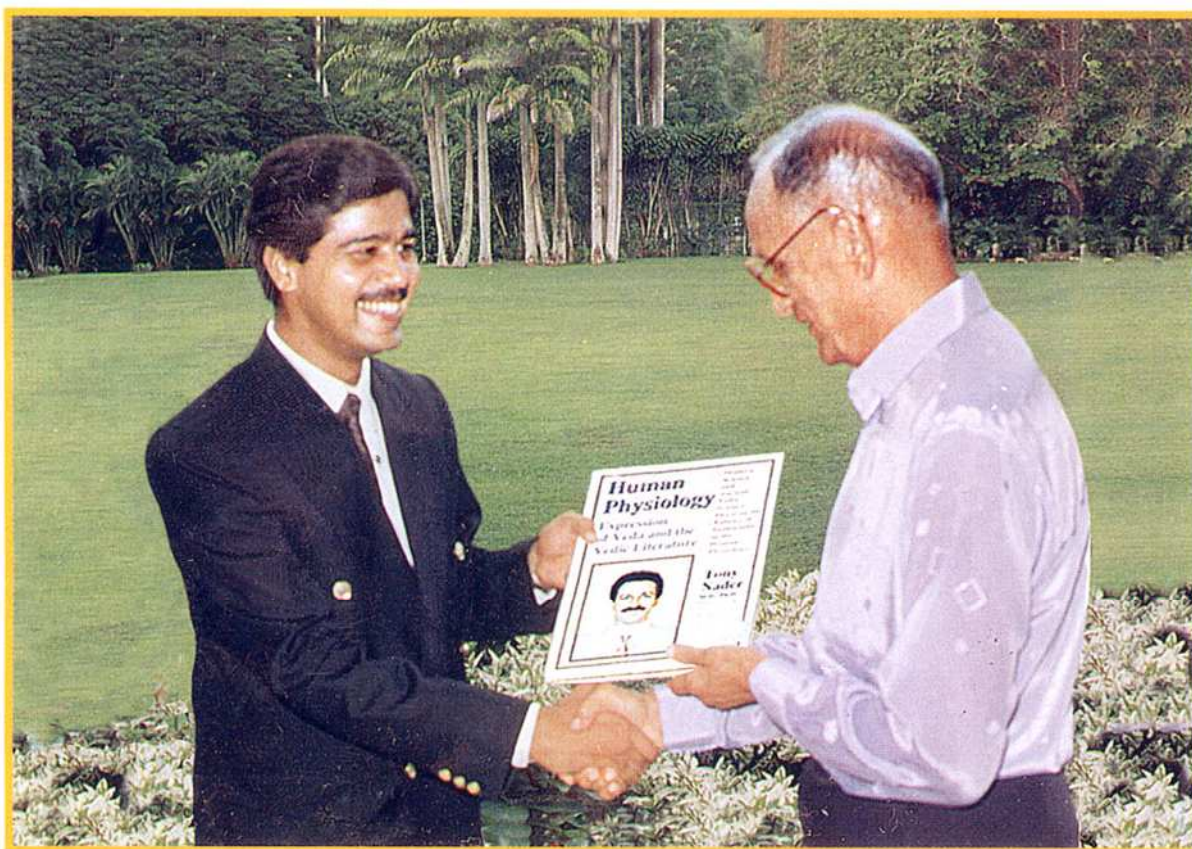
His Excellency Elias Harawi, President of the Republic of Lebanon, receiving *Human Physiology—Expression of Veda and the Vedic Literature* from the author, Dr Tony Nader.

**The President
of the Republic of Turkey
Welcomes Dr. Tony Nader's Discovery**



His Excellency Suleyman Demirel, President of the Republic of Turkey, receiving *Human Physiology—Expression of Veda and the Vedic Literature* from Dr. Örk Ozkaya on behalf of Dr Tony Nader.

**The President of the
Republic of Trinidad and Tobago
Welcomes Dr. Tony Nader's Discovery**



His Excellency Noor Mohammed Hassnali, President of the Republic of Trinidad and Tobago, receiving *Human Physiology—Expression of Veda and the Vedic Literature* from Dr Sanjay Bijwe, a noted neuropathologist from India.

MAHARISHI'S ACHIEVEMENTS

A Glimpse of Thirty-Eight Years Around the World—1957–1995

HIS HOLINESS MAHARISHI MAHESH YOGI, founder of Transcendental Meditation and the world-wide Spiritual Regeneration Movement (1957), introduced research in the field of consciousness and brought to light seven states of consciousness (1957–1967); created a new science—the Science of Consciousness, the Science of Creative Intelligence—and trained 2,000 teachers of this science (1972) [by now 40,000]; discovered the Constitution of the Universe—the lively potential of Natural Law—in R̥k Veda, and discovered the structuring dynamics of R̥k Veda in the entire Vedic Literature (1975); celebrated the Dawn of the Age of Enlightenment on the basis of the discovery of the *Maharishi Effect* (1975).

Maharishi created a World Government for the Age of Enlightenment with its sovereignty in the domain of consciousness and authority in the invincible power of Natural Law (1976); introduced the TM-Sidhi Programme and the experience of bubbling bliss in Yogic Flying to create supreme mind-body co-ordination in the individual and coherence in world consciousness (1976); formulated Maharishi's Absolute Theory of Government, Maharishi's Absolute Theory of Education, Maharishi's Absolute Theory of Health, Maharishi's Absolute Theory of Defence, Maharishi's Absolute Theory of Economy, Maharishi's Absolute Theory of Management, Maharishi's Absolute Theory of Law and Order, and Maharishi's Absolute Theory of Rehabilitation to raise every area of life to perfection (1977); brought to light the commentary of R̥k Veda, *Apaurusheya Bhāshya*, as the self-generating, self-perpetuating structure of consciousness (1980); organized the centuries-old scattered Vedic Literature as the literature of a perfect science—Maharishi's Vedic Science and Technology (1981);

Maharishi brought to light the full potential of Āyur-Veda, Gandharva Veda, Dhanur-Veda, Sthāpatya Veda, and Jyotish to create a disease-free and problem-free family of nations (1985); formulated the Master Plan to Create Heaven on Earth for the reconstruction of the whole world, inner and outer (1988); brought to light Supreme Political Science to introduce automation in administration and create conflict-free politics and a problem-free government in every country; inspired the formation of a new political party, the Natural Law Party, in an increasing number of countries throughout the world to enrich and support national law with Natural Law, and in this way promoted a practical procedure to actualize the Absolute Theory of Government (1992); inaugurated Global *Rām Rāj*—Global Administration through Natural Law (1993);

Maharishi discovered the Veda and Vedic Literature in the human physiology, establishing the grand unity of all material diversity of creation—of all sciences and of all religions (last quarter 1993). This has heralded the Dawn of the Vedic Civilization, civilization based on pure knowledge and the infinite organizing power of Natural Law—life according to Natural Law—where no one will suffer; all will enjoy the eternal glory of God—Heaven on Earth; established Maharishi Vedic Universities and Maharishi Āyur-Veda Universities throughout the world to offer mastery over Natural Law to every individual and to perpetuate life in accordance with Natural Law—perfection in every profession—and create Natural Law-based problem-free government in every country—governments with the ability to prevent problems (1993–1994); introduced programmes for prevention in the fields of health and security, to create healthy national life and an invincible armour of defence for the nation, by introducing new prevention-oriented programmes of Maharishi Āyur-Veda for perfect health, and by introducing the programme for a PREVENTION WING in the military of every country to disallow the birth of an enemy just by training a small percentage of the military in the Vedic Technology of Defence—Transcendental Meditation, the TM-Sidhi Programme, and Yogic Flying (1994).

In 1995, Maharishi established Maharishi University of Management in the U.S.A., Japan, Holland, and Russia to eliminate the problems of management everywhere, and actualize Maharishi's Absolute Theory of Government.

The knowledge of Natural Law was introduced in the field of management, and Maharishi's Corporate Revitalization Programme, to restore profitability and vitality to failing industries and improve the

performance of successful organizations, is now being introduced in companies in India, Europe, the United States, and Australia.

Maharishi University of Management offers practical programmes to prevent and eliminate problems of public administration, by bringing the support of Natural Law to national law.

In September 1995 Maharishi developed a Political Leadership Training course to present to leaders of all political parties the principles and scientifically validated programmes of perfect administration through Natural Law in order to achieve the ideal of conflict-free politics and problem-free government.

In September 1995 the state assembly of Madhya Pradesh, India, unanimously adopted a resolution establishing Maharishi Mahesh Yogi Vedic University in the state of Madhya Pradesh. Maharishi Vedic University will offer every citizen of Madhya Pradesh total knowledge of Natural Law, as brought to light by Maharishi from the Veda and Vedic Literature. Maharishi declared that this Vedic University will teach only one subject—Ātmā—the Self; and in this, the University will offer the FRUIT OF ALL KNOWLEDGE to everyone. Fruit of all knowledge means the total creative intelligence of the Self is fully awake on all levels of life—intellect, mind, senses, body, behavior, environment, and the individual's relationship with the entire cosmic life—the infinite organizing power of Natural Law spontaneously available to the whole field of thought, speech, and action.

The Fruit of All Knowledge can be made available to everyone because:

1. The basic nature of the Self is pure wakefulness—Transcendental Consciousness—pure knowledge, power, and bliss; and all streams of creation are nothing other than expressions of the unbounded ocean of the Self.
2. Maharishi's insights into: the nature of the Self, or Ātmā, of everyone; the emergence and evolution of Natural Law within this ocean of pure knowledge, power, and bliss; the holistic and specific structures of Natural Law available in the sounds of the Vedic Literature; Maharishi's commentary on R̥k Veda—Apaurusheya Bhāshya; and the beautifully structured Maharishi's Vedic Science, the Science and Technology of Consciousness, the complete science, which includes both approaches, the objective approach of modern science and subjective approach of consciousness.

These beautiful gifts of knowledge for all mankind are emerging as the rising rays of the Dawn of the Age of Enlightenment, which Maharishi inaugurated in 1975.

In October 1995 medical doctors from many nations adopted a resolution to establish Maharishi Medical Colleges in their countries in order to bring completeness to medical education, eliminate the hazards of modern medicine, and solve the current crisis in health care. These Medical Colleges will offer the highest standard of modern medical training supplemented by the latest understanding of human physiology in terms of the holistic and specific structures of intelligence available in the 37 values of Vedic Literature. To update the knowledge of practising physicians, Maharishi Institutes of Post-Graduate Medical Education are being established in conjunction with these Medical Colleges in countries throughout the world, including India, United States, Japan, the United Kingdom, and Australia.

In November 1995 Maharishi designed a global plan for administration through Natural Law by establishing in the centre of every country, state, province, and community a Maharishi Brahmasthān, a central point from where total Natural Law will be kept lively generation after generation in order to create an integrating influence for all the Laws of Nature functioning in the area, under the influence of all the Laws of Nature functioning in the ever-expanding universe. The influence of establishing the Brahmasthān has its basis in the most sophisticated, complete practical knowledge of Natural Law, whose mathematics are really beyond the comprehension of the human intellect. The only source of this complete practical wisdom of the connectedness of everything with everything else in the universe is the authentic knowledge of Maharishi Sthāpatya Veda, which is one of the 37 precious disciplines of Maharishi's Vedic Science.

Summary

Our physiology is continuously performing millions of tasks to maintain order and balance in its functioning, to allow growth and evolution to occur, and to bring about increasing achievement and fulfilment.

The perfect order displayed in the human physiology and throughout the universe is based on laws of Nature that have been studied by modern science for more than 150 years.

The profound insights into the ancient Vedic Literature brought to light by His Holiness Maharishi Mahesh Yogi over the past 38 years have guided the discovery that the laws that construct the human mind and body are the same as those that give structure to the syllables, verses, chapters, and books of the Vedic Literature.

The human physiology (including the DNA at its core) has the same structure and function as the holistic, self-sufficient, self-referral reality expressed in Rk Veda. The specialized components, organs, and organ systems of the human physiology, including all the various parts of the nervous system, match the 37 branches of the Vedic Literature one to one, both in structure and in function.

This discovery has unfolded the secrets of orderly functioning of all the organs in the body and how this orderliness can unfold its supreme quality, expressed as the absolute order in the infinite diversity of the universe. This discovery has opened the possibility for human existence to rise to a level of that order which is sustaining the universe and give the experience of 'Aham Brahmasmi'—'I am totality'—to everyone.

This discovery has rendered the study of physiology to be the actualization of the supreme philosophy of life, which establishes individual consciousness and national consciousness on the level of cosmic life.

Study of physiology in terms of the structure of Veda is that revelation of our scientific age that raises the individual dignity of human beings to the cosmic dignity of the universe.

It is my joy to state that this discovery of Veda and Vedic Literature in human physiology is the textbook of total knowledge to bring complete enlightenment to everyone, simply because it is the presentation of the essence of the entire field of modern objective science and ancient subjective science. There is nothing beyond one grand field of consciousness, which holds: body is mind—matter is intelligence—physiology is consciousness.

This discovery brings to light physiology in terms of its inner intelligence, whose impulses are available in the form of sounds of the Veda and Vedic Literature.

This discovery and its practical application through the Vedic approach of Maharishi's programmes offers perfection to mankind. It offers to create a disease-free, crime-free, problem-free society. It offers to prevent and eliminate problems of management in any organization, industry, or government. Every educator can be the custodian and bestower of the fruit of all knowledge to everyone—a mistake-free, problem-free, healthy, happy life. The health-care system of every country can achieve that supreme level of perfection where no sickness or suffering can occur.

This discovery heralds the dawn of a new civilization and the fulfilment of the age-long search for perfection in life. Heaven on Earth awaits mankind through this practical knowledge, which cherishes the physical diversity of the universe on the level of unity—self-referral consciousness—with the absolute authenticity of the eternal Veda, Natural Law, and its expression, the eternal universe.

It is my fulfilment that this discovery is being made available to the whole population through all channels of education and health in countries where science and scientific research are applied for the benefit of mankind. Maharishi Vedic Universities, Maharishi Ayur-Veda Universities, and Maharishi Universities of Management are being established to bring perfection in life.

Human Physiology

Expression of Veda
and the Vedic Literature



**Modern
Science
and
Ancient
Vedic
Science
Discover the
Fabrics of
Immortality
in the
Human
Physiology**

Tony Nader, MD, PhD

International President of
Maharishi Ayur-Veda Universities

**A TEXTBOOK OF LIFE
FOR EVERYONE**



Dr Nader received his MD degree from the American University of Beirut, where he also studied internal medicine and psychiatry.

His PhD is in the area of Brain and Cognitive Science from the Massachusetts Institute of Technology (MIT), where he was also

a visiting physician at the Clinical Research Centre. He did his post-doctoral work as a Clinical and Research Fellow in Neurology at the Massachusetts General Hospital, Harvard Medical School.

Dr Nader conducted research on neurochemistry, neuroendocrinology, and the relationship between diet, age, behaviour, mood, seasonal influences, and neurotransmitter and hormonal activity, and on the role of neurotransmitter precursors in medicine.

His interest in natural health care led him, while at MIT, to conduct research on Maharishi Ayur-Veda herbal and mineral preparations for their safety, their effects on memory and behaviour, and their ability to prevent ageing and disease, including cancer.

He also conducted original research on the effects of Maharishi's Transcendental Meditation and TM-Sidhi Programme in solving social and international problems.

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He has organized courses and lectured widely on Maharishi Ayur-Veda, the ancient system of perfect health, in more than 50 countries and held positions as a professor and director of Maharishi Ayur-Veda programmes.

He is currently International President of Maharishi Ayur-Veda Universities, and has been honoured by Maharishi as a 'Custodian of the Constitution of the Universe'.

On the basis of his knowledge of physiology, Dr Nader has successfully correlated each aspect of the Vedic Literature to a specific area of physiology, with the conclusion that human physiology is the expression of Veda and the Vedic Literature. This is the subject matter of this book.

This discovery has been appreciated by scientists and political leaders throughout the world, including the Presidents of India, Mozambique, Lebanon, Turkey, and Trinidad and Tobago.

**Discovery of the
unlimited reservoir of
energy and intelligence
within the physiology
of everyone and
scientifically validated
programmes to harness
this energy and intelligence
for all possibilities
in daily life**

1995

Human Physiology

**Expression of Veda
and the Vedic Literature**

**Modern Science and
Ancient Vedic Science
Discover the
Fabrics of Immortality
in the Human Physiology**

Tony Nader, MD, PhD

HUMAN PHYSIOLOGY

Expression of Veda and the Vedic Literature

Modern Science and Ancient Vedic Science

Discover the Fabrics of Immortality in the Human Physiology

by Tony Nader, MD, PhD

Second Edition

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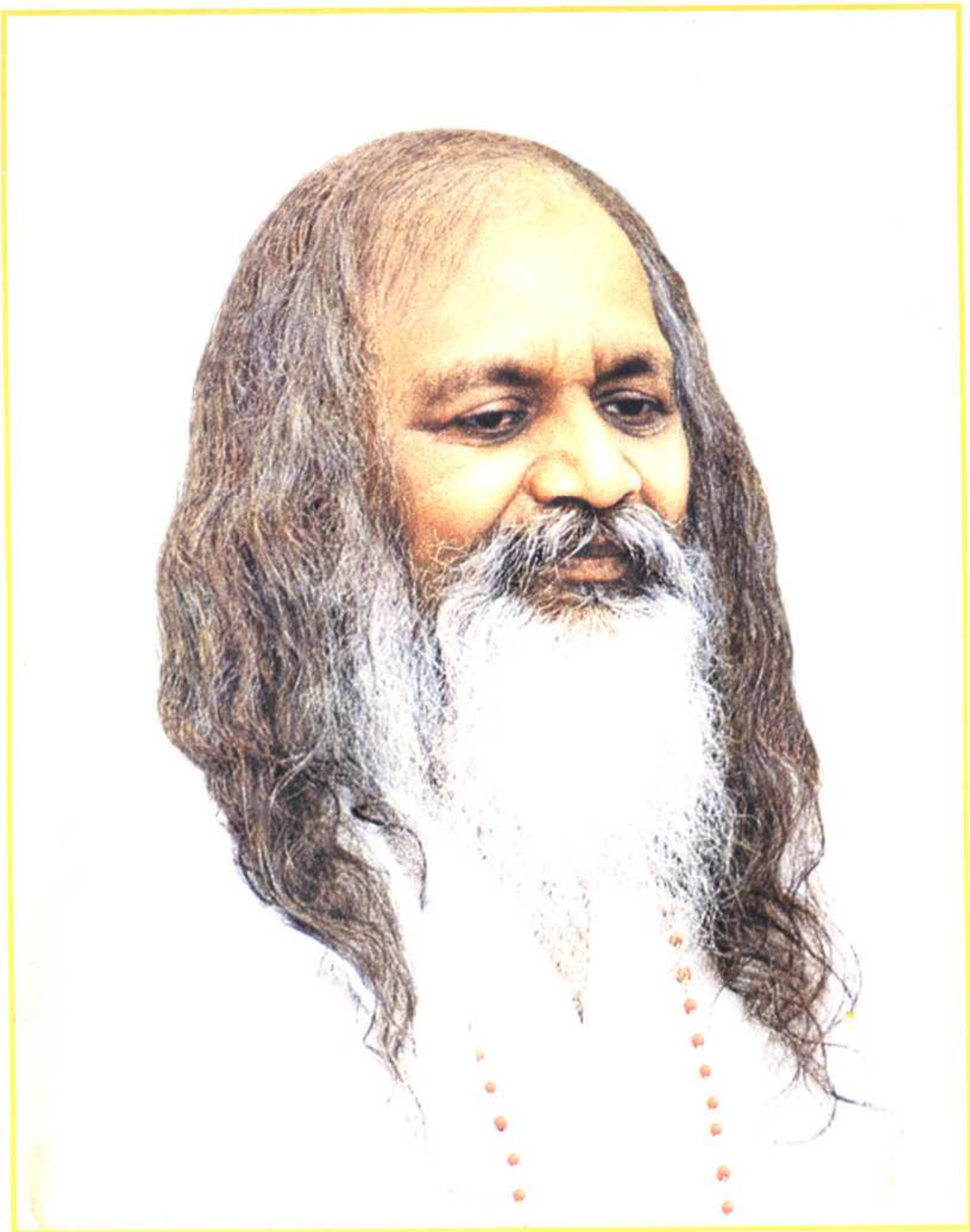
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Dedicated to
His Holiness
Maharishi Mahesh Yogi,
the Guiding Light
of the Discovery of Veda
and the Vedic Literature
in Human Physiology



HIS HOLINESS MAHARISHI MAHESH YOGI

(achievements on last page)

*‘**H**ere is the first
and final disclosure of
knowledge that presents
every human being as
the embodiment of the total
creative process in Nature
and renders human life
as a field of all possibilities.*

*‘This offers mastery over
Natural Law to everyone and
perfection to every nation—
Heaven on Earth.’*

—Maharishi

The Author



Dr Nader received his MD degree from the American University of Beirut, where he also studied internal medicine and psychiatry.

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Dr Nader conducted research on neurochemistry, neuroendocrinology, and the relationship between diet, age, behaviour, mood, seasonal influences, and neurotransmitter and hormonal activity, and on the role of neurotransmitter precursors in medicine.

His interest in natural health care led him, while at MIT, to conduct research on Maharishi Ayur-Veda herbal and mineral preparations for their safety, their effects on memory and behaviour, and their ability to prevent ageing and disease, including cancer.

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This discovery has been appreciated by scientists and political leaders throughout the world, including the Presidents of India, Mozambique, Lebanon, Turkey, and Trinidad and Tobago.

Summary

Our physiology is continuously performing millions of tasks to maintain order and balance in its functioning, to allow growth and evolution to occur, and to bring about increasing achievement and fulfilment.

The perfect order displayed in the human physiology and throughout the universe is based on laws of Nature that have been studied by modern science for more than 150 years.

The profound insights into the ancient Vedic Literature brought to light by His Holiness Maharishi Mahesh Yogi over the past 38 years have guided the discovery that the laws that construct the human mind and body are the same as those that give structure to the syllables, verses, chapters, and books of the Vedic Literature.

The human physiology (including the DNA at its core) has the same structure and function as the holistic, self-sufficient, self-referral reality expressed in R̥k Veda. The specialized components, organs, and organ systems of the human physiology, including all the various parts of the nervous system, match the 37 branches of the Vedic Literature one to one, both in structure and in function.

This discovery has unfolded the secrets of orderly functioning of all the organs in the body and how this orderliness can unfold its supreme quality, expressed as the absolute order in the infinite diversity of the universe. This discovery has opened the possibility for human existence to rise to a level of that order which is sustaining the universe and give the experience of ‘Aham Brahmāsmi’—‘I am totality’—to everyone.

This discovery has rendered the study of physiology to be the actualization of the supreme philosophy of life, which establishes individual consciousness and national consciousness on the level of cosmic life.

Study of physiology in terms of the structure of Veda is that revelation of our scientific age that raises the individual dignity of human beings to the cosmic dignity of the universe.

It is my joy to state that this discovery of Veda and Vedic Literature in human physiology is the textbook of total knowledge to bring complete enlightenment to everyone, simply because it is the presentation of the essence of the entire field of modern objective science and ancient subjective science. There is nothing beyond one grand field of consciousness, which holds: body is mind—matter is intelligence—physiology is consciousness.

This discovery brings to light physiology in terms of its inner intelligence, whose impulses are available in the form of sounds of the Veda and Vedic Literature.

This discovery and its practical application through the Vedic approach of Maharishi's programmes offers perfection to mankind. It offers to create a disease-free, crime-free, problem-free society. It offers to prevent and eliminate problems of management in any organization, industry, or government. Every educator can be the custodian and bestower of the fruit of all knowledge to everyone—a mistake-free, problem-free, healthy, happy life. The health-care system of every country can achieve that supreme level of perfection where no sickness or suffering can occur.

This discovery heralds the dawn of a new civilization and the fulfilment of the age-long search for perfection in life. Heaven on Earth awaits mankind through this practical knowledge, which cherishes the physical diversity of the universe on the level of unity—self-referral consciousness—with the absolute authenticity of the eternal Veda, Natural Law, and its expression, the eternal universe.

It is my fulfilment that this discovery is being made available to the whole population through all channels of education and health in countries where science and scientific research are applied for the benefit of mankind. Maharishi Vedic Universities, Maharishi Ayur-Veda Universities, and Maharishi Universities of Management are being established to bring perfection in life.

12 May 1995

Tony Nader

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CHAPTER I

Modern Science and Ancient Vedic¹ Science

The ancient Veda and Vedic Literature², brought to light and understood with a scientific perspective by His Holiness Maharishi Mahesh Yogi in his Vedic Science and Technology, identify a single, universal source³ of all orderliness in Nature⁴.

*Universal
Source
of Order*

This universal source of all orderliness has within itself all the diverse laws of Nature⁵ governing life at every level of the manifest universe. The entire animate and inanimate creation is based on these laws and their sequential unfoldment. Maharishi describes in his Vedic Science that the totality of all these laws of Nature are expressed in Veda and the Vedic Literature. The sounds of Veda⁶ which have been recited generation after generation in the tradition of the Vedic families have been described by Maharishi as *'the laws of Nature murmuring to themselves. They are Natural Law describing itself and its own structure and function—eternally the same total potential of Natural Law on that self-referral⁷ level of intelligence.'*

1. 'Vedic' means pertaining to Veda. Veda is a Sanskrit term which means knowledge. In this first chapter, an overview of the discovery of Veda and the Vedic Literature in human physiology and its implications are presented in seed form. The special terminology used is briefly introduced and defined in the footnotes.

2. The 'Vedic Literature' is an age-old literature of India. It has been preserved generation after generation, from parents to children, in the Vedic families of India. It is a large collection of verses and books, which are divided into 36 disciplines, also called 36 aspects or branches. Each branch specializes in a particular field or aspect of knowledge. In addition to the 36 branches of the Vedic Literature there is one aspect called Rk Veda. The speciality of Rk Veda is wholeness, the holistic aspect of total knowledge. In this book, Rk Veda will be often simply referred to as Veda, while the other 36 branches will be referred to as the Vedic Literature.

3. See page 2, Figure 1 (Unified Field Chart explained).

4. The term 'Nature' is used here in its broadest meaning to include all animate and inanimate objects, all forms of life, and all that exists in the entire universe, from its unmanifest, unified level to all its expressions, forms, and phenomena.

5. The term 'laws of Nature' refers to all the laws of physics, biology, psychology, etc., including the laws which structure life at the individual and social levels, and which maintain order in the infinite diversity of the universe. The term 'Natural Law' refers to the integrated, balanced, and holistic functioning of all the laws of Nature. National laws (traffic laws, property laws, etc.) and international laws are a creation of human beings—they can be near or far from Natural Law, depending on how much the awareness of the human beings or societies that create them is in tune with Natural Law. The ability to be in perfect harmony with Natural Law, and how to achieve this ability through Maharishi's Vedic Science and Technology, are discussed in this chapter. Maharishi's Vedic Science and Technology offers a practical, scientifically validated procedure to apply this most fundamental and powerful level of Natural Law for the benefit of mankind.

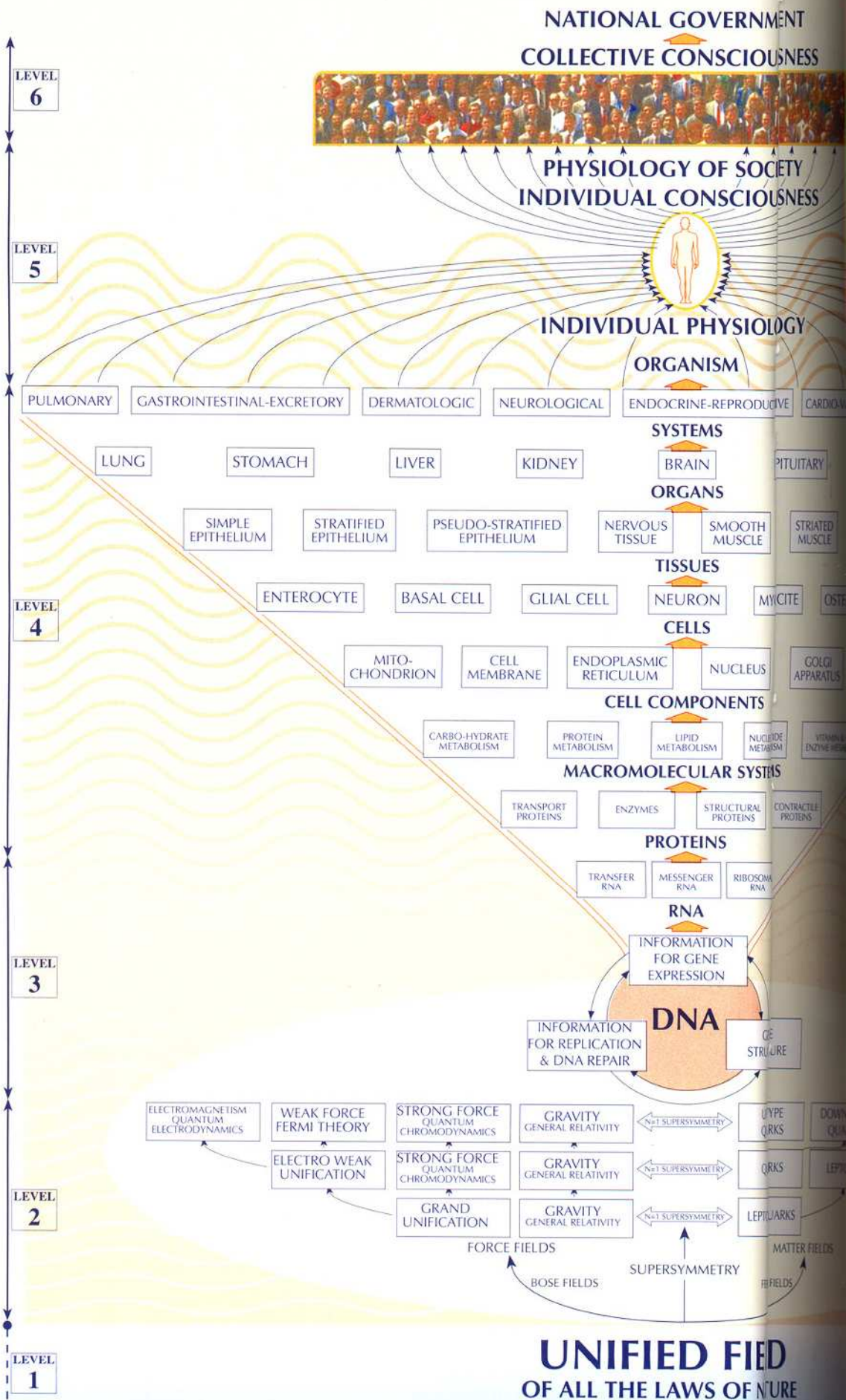
6. The term 'sounds of Veda' refers to the sound value in the texts of Veda. A word has two aspects, sound and meaning. When one hears a foreign language, one hears the sound, but does not understand the meaning. (Some sounds don't have any meaning in any language!) In Veda and the Vedic Literature, the sound value of the Vedic chanting or recitation is given importance and not the meaning.

7. Self-referral level of intelligence is the level of the Unified Field (see Figure 1). Self-referral means that it does not have any reference outside itself—it does not need any other element to justify its existence, its position, its size, or its 'raison d'être'. It is absolute and 'self-sufficient'—it needs nothing outside itself.

A SINGLE, UNIVERSAL SOURCE OF ALL

Figure 1 illustrates the relationship of the macroscopic levels of a society and an individual to the microscopic levels of a cell and a molecule, and to the quantum mechanical levels of Nature's functioning. The Unified Field of all the laws of Nature is an unmanifest field at the source of all manifestation. It is a single, universal source of all orderliness in Nature—the home of all the laws of Nature maintaining balance and order in every aspect of the universe. This chart also illustrates how the Maharishi Technology of the Unified Field contributes to modern physiology by providing a new integrated approach in which the whole range of physiology can be appreciated from its source in the Unified Field of all the laws of Nature.

The chart further shows how the Unified Field gives rise to the fundamental force and matter fields, which then generate the DNA molecule—the material expression of the Unified Field, which creates and governs the flow of biological intelligence in all the various levels of physiological organization. The sequential expression of knowledge and organizing power from the Unified Field is displayed in the chart in terms of six hierarchical levels: Level 1—the Unified Field; Level 2—the fundamental force and matter fields; Level 3—the DNA and RNA molecules; Level 4—the expressed levels of physiological organizations (proteins, macromolecular systems, cell components, cells, tissues, organs, and organ systems); Level 5—individual physiology and individual consciousness; and Level 6—the physiology and collective consciousness of society. This vision of all levels of physiology at a glance helps connect any one level with the Unified Field of all the laws of Nature, which the individual experiences through the Maharishi Technology of the Unified Field as his own simplest state of awareness, Transcendental Consciousness. The names of Rk Veda and the 36 aspects of the Vedic Literature are written inside the blue band at the bottom of the chart. This is to illustrate that Veda and the Vedic Literature reside in their unmanifest form in the Unified Field (see text for more detail).



OF ALL ORDERLINESS IN NATURE

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PITUITARY

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SPLEEN

THYMUS

STRIATED
MUSCLE

BONE

RETICULAR CONNECTIVE
TISSUE

OCYTE

OSTEOBLAST

MACROPHAGE

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VITAMIN & CO-
ENZYME METABOLISM

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ATURE

Gandharva Veda

Shikshā

Kalpa

Vyākaraṇa

Nirukta

Chhanda

Jyotish

Vāgbhatt

Bhāva Prakāsha

Shārṅgadharma

Mādhava Nidāna

Smṛiti

Purāṇa

Itihāsa

Veda Prātishākhya

Sāma Veda Prātishākhya

Atharva Veda Prātishākhya

Atharva Veda Prātishākhya (Chaturadhyāyī)

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MAHARISHI'S TRANSCENDENTAL MEDITATION

MAHARISHI'S TRANSCENDENTAL MEDITATION ALLOWS THE CONSCIOUS MIND TO IDENTIFY ITSELF WITH THE UNIFIED FIELD OF ALL THE LAWS OF NATURE, THE TOTAL POTENTIAL OF NATURAL LAW, IN TRANSCENDENTAL CONSCIOUSNESS.

Through Maharishi's Transcendental Meditation, the conscious mind, gaining Transcendental Consciousness, identifies itself with the Unified Field.

UNIFIED FIELD OF ALL THE LAWS OF NATURE

Government
of Nature
governs through
NATURAL
LAW

Modern Science

In the past 200 years, modern science has systematically revealed deeper layers of order in Nature, from the molecular and atomic to the nuclear and subnuclear levels. Recent discoveries in quantum mechanics have revealed even more fundamental levels of Nature's functioning where the diverse forces and laws of Nature are unified, ultimately leading to one Unified Field of all the laws of Nature (see Figure 1). The biological sciences have made great advances in uncovering the structure and understanding the function of the anatomy and physiology of living things. The secrets of the dynamics of the human physiology⁸ have been the object of tireless research and investigations.

The Human Physiology

Human beings have always wanted to understand the laws of Nature that structure their own anatomy and physiology, to comprehend that incredible machine which can fathom the farthest ends of the universe, create wings that make it fly to the moon, and experience a taste of the Divine. Today, in modern science, a profound understanding of the laws⁵ at the basis of the functioning of the human physiology has emerged.

These laws⁵ are displayed in the integrated, perfect structure and function of the physiology. The physiology spontaneously and sequentially computes changing conditions, integrates them, and responds to them in accordance with its requirements and those of the environment. This means action and transformation in accordance with the laws of Nature, allowing for growth and evolution.

Maharishi's Vedic Science

In Maharishi's Vedic Science, the source of these same fundamental laws is described as an unmanifest state of Absolute Pure Being⁹. This universal source of all the laws of Nature is self-referral and self-sufficient⁷. It is conscious of itself—pure consciousness¹⁰ devoid of any object outside itself. All the laws of Nature in their unmanifest state are found in the dynamics of self-referral consciousness—consciousness knowing itself. These eternal dynamics are embodied in the very structure of the sounds of Rk Veda¹¹ and the entire Vedic Literature (see Figure 8).

8. The term 'physiology' will be used often in its broadest meaning, to include the structure (anatomy) and function (physiology) of the human body.

9. The term 'Pure' means, in this context, unmixed, devoid of anything outside itself. When we say, for example, water is pure, we mean that there is nothing else in it other than water. Water is, however, a mixture of hydrogen and oxygen atoms. Atoms are a mixture of electrons and other particles. In this way everything in the manifest creation is a 'mixture' of particles, waves, etc. Only the Unified Field of Natural Law (see Figure 1) is always unchanging, equal to itself, and never mixed with anything outside its pure self. In this way, it is described as Absolute Pure Being.

10. The unified, abstract field of Pure Being (see Figure 1) is described in the Vedic Literature as a field which is 'awake' and 'alert' to its own self. It is conscious of itself. It knows itself. It has consciousness—knowingness. This field is open to direct experience through Maharishi's Transcendental Meditation Programme (as described later).

11. Rk Veda means the Veda of Rk, the knowledge of Rk. It contains in seed form all other aspects of the Vedic Literature, as described later in this book (see also footnote 2, page 1).

*Heaven
on
Earth*

This book reveals that the descriptions of the human physiology provided by modern science, and the description of Veda and the Vedic Literature provided by Maharishi's Vedic Science, are identical, and that these two great traditions of knowledge—objective and subjective, modern and ancient—uphold one another and together rejoice in providing for mankind the basic and timely knowledge of Natural Law, which alone is competent to eliminate all problems and raise the quality of life in society to the level of 'Heaven on Earth'¹².

*Maharishi's
Commentary
on R̥k Veda*

Maharishi's Apaurusheya Bhāshya (Maharishi's commentary on R̥k Veda—see Chapter IV and Figure 8) finds Veda (pure knowledge and its infinite organizing power¹³) to extend from the smallest point value to the largest infinite value of the ever-expanding universe. It also finds that this immense range is completely covered in a perfect, sequential order of expressions¹⁴, in such a way that the whole universe is very clearly available as the structure of Veda¹⁵. This truth, revealed by Maharishi's commentary, has made the entire structuring dynamics¹⁶ of creation available in R̥k Veda and the Vedic Literature.

*Vedic Science,
Modern Science,
and Human
Physiology*

It is a highly significant feature of our scientific age that this complete knowledge of Natural Law provided by Maharishi's Vedic Science is now open to scientific confirmation through the most recent discoveries of the structure and function of the human body, human anatomy and physiology.

Indeed, we see in this book that precisely this same structure of sequential unfold-

12. 'Heaven on Earth' means 'all good to everyone and non-good to no one'. It is a state in which everyone lives, thinks, and acts according to Natural Law. When the laws of Nature are not violated, there are no mistakes, no problems, and no suffering. Life flows according to its perfect evolutionary design—governments are problem-free, politics is conflict-free, and the society is progressive and disease-free.

13. 'Pure knowledge and its infinite organizing power': Knowledge helps to get things organized. Without knowledge, there can be disorder. If one knows where things belong and their function, then one knows where to put them and how to use them. Greater knowledge gives greater organizing power. Pure knowledge, which means knowledge of the unmanifest field of pure consciousness, is infinite knowledge. This is because all the laws of Nature and all their possible interactions are contained within this Unified Field. This gives infinite organizing power. Pure knowledge, therefore, has within it infinite organizing power—this is Veda.

14. 'Sequential order of progression' refers to the sequence of syllables, phrases, verses, stanzas, chapters, and books of Veda and the Vedic Literature.

15. The universe can be pictured to have a structure born out of the relationships between its individual components. Veda has that same structure born out of the relationships of its own components. The components of Veda are its syllables, phrases, verses, chapters, etc.

16. 'Structuring dynamics' refers to the laws of Nature whose dynamics of interaction give a structure to the universe or to any part thereof. For example, the reason why a wave in the ocean assumes its particular shape (rolling, round, ...) is because of the forces acting on it: gravity, wind, pressure, cohesion of the water molecules, etc. These are some of the aspects of the laws of Nature, whose interaction produces the structure of a wave in the ocean. In reality, all the laws of Nature are present everywhere and in everything, but the degree to which they are expressed varies. This is what creates the infinite diversity of the universe.

ment of the self-interacting dynamics¹⁷ of Natural Law is available in the structure and function of the human anatomy and physiology (see Chapter IV).

The following chapters will describe how the structure of Veda is reflected in the human physiology.

*36 Aspects
of the Vedic
Literature*

All 36 aspects of the Vedic Literature have been found to correspond in structure and function to the human anatomy and physiology.

*Blueprint
of
Creation*

This exact correspondence between the structure and function of the human physiology and the structure and function of Veda shows that Veda is the blueprint of creation—the blueprint which evolves into physical creation. The human physiology has its basis in Veda, which is *Nitya* (eternal) and *Apaurusheya* (uncreated).

*Knowledge for
Perfection
in Life*

This gives us great confidence that the knowledge of the most fundamental level of Natural Law is now fully available to mankind, to create perfection in individual and social life.

*Scientific
Research on the
Transcendental
Meditation and
TM-Sidhi
Programme*

Fortunately, Maharishi's Vedic Science and Technology provides not only detailed intellectual understanding of Natural Law, but a highly practical, scientifically validated technology to apply this most fundamental and powerful level of Natural Law for the benefit of mankind. Over 500 scientific studies conducted at more than 200 universities and research institutes in 30 countries throughout the world have verified the immense practical benefits of this simple technology—Maharishi's Transcendental Meditation, TM-Sidhi Programme¹⁸ and Yogic Flying¹⁹—which develops full human potential in all areas of mind, body, and behaviour.

*Life
According
to Natural
Law*

The total potential of Natural Law on the self-referral level of individual intelligence is fully enlivened by the attention of the conscious mind through the applied technologies of Maharishi's Vedic Science, which include Maharishi's Transcendental Meditation, the TM-Sidhi Programme, and Yogic Flying, as well as the programme of reading and listening to the Vedic Literature. With this, individual thought and action become

17. 'Self-interacting dynamics' refers to the self-sufficient, self-referral quality of the structuring dynamics of Natural Law, which creates all diversity from within itself. It is independent of anything outside itself (see also footnote 7, page 1).

18. **The Transcendental Meditation and TM-Sidhi Programme, leading to Yogic Flying:** Maharishi's Transcendental Meditation is a simple, natural, effortless procedure whereby the mind easily and naturally arrives at the source of all thought—Transcendental Consciousness—pure consciousness, self-referral consciousness, which is the source *Continued on page 9 ...*

19. **TM-Sidhi Programme of Yogic Flying:** Yogic Flying is a phenomenon created by a specific thought projected *Continued on page 10 ...*

spontaneously in accord with all the laws of Nature. Once life is lived in accord with all the laws of Nature that govern physiological, psychological, and sociological processes, problems of ill-health and inappropriate behaviour do not arise. The individual receives the support of all the laws of Nature for the fulfilment of all his desires and aspirations.

*Group Practice
to Eliminate
Collective
Stress*

The single most profound application of Maharishi's Vedic Science and Technology is the collective practice of the TM-Sidhi Programme. Group practice of the TM-Sidhi Programme and Yogic Flying by as few as 7,000 citizens has been scientifically shown to create coherence in collective consciousness, eliminate collective stress, and raise life to be spontaneously in accord with Natural Law. This has been called by scientists 'the Maharishi Effect.'²⁰

Extensive scientific research has shown that group practice of Maharishi's Transcendental Meditation and TM-Sidhi Programme increases positive trends throughout society and decreases negative trends such as ill-health, crime, and other anti-social behaviour.

*Support
of Natural
Law*

With this scientifically proven programme, the entire population of a nation now has the chance to enjoy the full support of all the laws of Nature for the fulfilment of all its goals and aspirations.

*Government
Gaining the
Ability
to Prevent
Problems*

By incorporating into the national constitution a clause which guarantees the establishment and maintenance of such a coherence-creating group, national law will gain the support of Natural Law. This means every government can gain the ability to prevent problems.

*Universal
Order to
Support
National Order*

The insight into the parallels between the structure of human physiology and the structure of Veda gives us an insight into the absolute order that prevails in the universe: the self-referral, unmanifest level of intelligence assumes its object-referral, manifest quality²¹. It administers the infinitely diverse multiplicity of all the objective values of its own expressions—the entire universe. This is possible because all the manifest objective values eternally maintain their connectedness with their unified source—the unmanifest level of intelligence. The order in creation and evolution is eternal and can never be disturbed because there is no second element to pure intelligence. It is all that there is.

20. **Maharishi Effect:** The *Maharishi Effect* is the phenomenon of the rise of coherence in the collective consciousness of any community. The *Maharishi Effect* was discovered by social scientists in the U.S.A. in 1974 in four cities,

Continued on page 10 ...

21. Intelligence, which is a subjective abstract reality, expresses itself in the material creation, which is an objective concrete reality. The manifest material creation is the object-referral expression of pure unmanifest intelligence, which is the Unified Field.

This supreme level of understanding of creation and evolution has been verified as a scientific truth through our comparative study of the structure of Veda and the structure of the human physiology.

*Technique
to Gain
Support of
Natural Law*

Therefore, in order to train the physiology to always function in the same sequence in which its structure is designed, and allow the nervous system to always, unmistakably, maintain the sequence of evolution, the traditional practice of chanting and reading Veda and

the Vedic Literature should be maintained. By listening to Rk Veda, the nervous system will be maintained in its natural functioning without any imbalance. In reading

*Meditate
and Read
the Vedic
Literature*

or listening to other aspects of the Vedic Literature, corresponding aspects of the physiology will be maintained in their natural functioning. Therefore, in order to habituate the physiology to function in perfect sequence, it is only necessary to read the Vedic Lit-

erature and to take the awareness to the transcendent. This will enliven all the gross

*Perfect
Education and
Administration:
Perfection
to Life*

and subtle levels of intelligence in the physiology. '*Meditate, listen to Veda, and read the Vedic Literature*'—this is the basis of perfect education, and this becomes the theme of perfect administration. Train everyone in this way and the whole society will be set in spontaneous right action.

Footnote continues from page 6 ...

of all creative processes.

This process can be likened to a river which naturally and effortlessly flows into the ocean and gains the status of the ocean.

Transcendental Meditation is practised for 15 to 20 minutes in the morning and evening, while sitting comfortably with the eyes closed. During this technique, the individual's awareness settles down and experiences a unique state of restful alertness. As the body becomes deeply relaxed, the mind transcends all mental activity to experience the simplest form of awareness—Transcendental Consciousness—where consciousness is open to itself. This is the self-referral state of consciousness.

The experience of Transcendental Consciousness develops the individual's latent creative potential, while dissolving accumulated stress and fatigue through the deep rest gained during the practice. This experience enlivens creativity, dynamism, orderliness, and organizing power within one's awareness, which results in increasing effectiveness and success in daily life.

Transcendental Meditation can be easily learned by anyone. People of all levels of intelligence, belonging to all ages, belonging to all cultures, religions, and educational backgrounds in countries throughout the world practise this technique.

The TM-Sidhi Programme is an advanced aspect of Transcendental Meditation. It trains the individual to think and act from the level of Transcendental Consciousness, greatly enhancing the co-ordination between mind and body, and developing the ability to enliven Natural Law to support in all avenues of life the fulfilment of one's desires.

Transcendental Meditation renders all aspects of life according to Natural Law. Its applications in the fields of politics, economy, religion, and culture of every country is so rewarding that it has started to bring a new wave of excellence to lead the present civilization to the height of perfection.

The benefits of Transcendental Meditation are so many and so great that it has been Maharishi's plan to launch a programme of complete transformation of life on earth—the creation of Heaven on Earth. How is Transcendental Meditation able to accomplish this overall enrichment of life?

Firstly, Transcendental Meditation is the technology of Consciousness, which is the most basic element of life—it is the home of all the laws of Nature. [Refer to the *Richo Akshare* verse of Rk Veda (*Rk Veda*, 1.164.39)]. See also Chapter VI, which explains how Transcendental Meditation (*Parame vyoman*) unfolds the creative genius (*Yasmin Devā*) of the self-referral state of intelligence—the home of all the laws of Nature (*Richo Akshare*)—and inspires the laws of Nature to uphold all thought, speech, and action. The support of Natural Law increases in daily life with regular practice.

Secondly, it eliminates stress and the most basic cause of all stress and strain. All people live their lives through the cycles of routine work, whether they are students, working adults, or retired people; and routine work in daily life does not provide an opportunity for the full expression of Creative Intelligence.

This lack of opportunity to display creativity causes frustration and becomes the basis of all anti-social behaviour.

Transcendental Meditation helps the awareness to transcend boundaries and go beyond the field of limitations. By providing the opportunity to create unboundedness, infinity, eternity, Transcendental Meditation satisfies the inner creativity and inner genius of life and provides the possibility for the full expression of Creative Intelligence. The daily opportunity for the individual's awareness to go beyond boundaries (through Transcendental Meditation) neutralizes the rigidity caused by the boundaries of daily routine.

Thirdly, the marvel of Transcendental Meditation is that both of these above-mentioned values—the blossoming of creativity and the dissolution of the basis of all suffering—are achieved in one stroke.

End of Footnote

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from Transcendental Consciousness, the Unified Field of Natural Law, the field of all possibilities. This is the simplest state of human consciousness, self-referral consciousness, which is easily accessible to anyone through Transcendental Meditation, and is enlivened through the TM-Sidhi Programme, which leads to Yogic Flying.

Yogic Flying demonstrates perfect mind-body co-ordination and is correlated with maximum coherence, indicating maximum orderliness and integration of brain functioning. Even the first stage of Yogic Flying, where the body lifts up in a series of short hops, gives the experience of bubbling bliss for the individual and generates coherence, positivity, and harmony for the environment.

Regular practice of Yogic Flying leads the individual mind to enjoy control of Nature's central switchboard from where Natural Law governs the life of everyone and administers the entire universe from within the intelligence of every grain of creation.

From this level of total potential of Natural Law, the individual can command all channels of Nature's infinite creativity and the invincible organizing power of Natural Law. Just as an order from the Head of State or the Prime Minister commands the total authority and resources of the nation for its implementation; similarly, any intention projected from the Unified Field of Natural Law commands the infinite organizing power of Natural Law for its immediate fulfilment.

The practice of Yogic Flying provides a practical demonstration of the ability to project thought from the Unified Field of Natural Law, and develops the ability to act spontaneously in accord with Natural Law for the fulfilment of any desire. The phenomenon of Yogic Flying proves that through Maharishi's Transcendental Meditation and TM-Sidhi Programme, anyone can gain the ability to function from the simplest form of their own awareness and develop mastery over Natural Law.

Maharishi's TM-Sidhi Programme provides a direct entry to the full blossoming of the creative genius of everyone; it is a master key to open the field of higher states of consciousness, where one naturally lives life supported by the evolutionary power of Natural Law.

End of Footnote

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where the number of people participating in the Transcendental Meditation Programme had reached one per cent of the town's population.

They noted that when one per cent of the town's population practised Transcendental Meditation, the trend of rising crime rate was reversed, indicating increasing order and harmony.

Research scientists named this phenomenon of rising coherence in the collective consciousness of society the *Maharishi Effect* because this was the realization of Maharishi's promise to society made in the very early days of his Movement (1962).

Extensive research on the phenomenon of the *Maharishi Effect* (like the phenomenon of the Meissner Effect in Physics) has repeatedly verified that coherence in collective consciousness and positivity and harmony in national consciousness is produced by the group practice of Maharishi's Transcendental Meditation. This has proved to be a formula to create irreversible world peace and Heaven on Earth—all good to everyone and non-good to no one—the basis of a coherent, integrated society and a perfect government.

The Extended Maharishi Effect: In 1976, with the introduction of the more advanced TM-Sidhi Programme, including Yogic Flying, a more powerful effect was expected. This prediction was first verified in 1978 during Maharishi's Global Ideal Society Campaign in 108 countries: crime rate was reduced everywhere.

This global research demonstrated a new formula: the square root of one percent of a population practising Transcendental Meditation and the TM-Sidhi Programme, morning and evening together in one place, is sufficient to neutralize negative tendencies and promote positive trends throughout the whole population.

This much reduced requirement (in many cases just a few hundred individuals practising Maharishi's Vedic Technology of Transcendental Meditation, the TM-Sidhi Programme, and Yogic Flying will be sufficient to bring life in accordance with Natural Law for a whole nation) enabled this discovery to be repeatedly verified on the city, provincial, and national levels.

Continued on page 11...

Global Maharishi Effect: The *Global Maharishi Effect* was created by the group practice of 7,000 Yogic Flyers—*Footnote continues from page 10...*

7,000 being approximately the square root of one per cent of the world's population.

The *Global Maharishi Effect* was witnessed during three large 'World Peace Assemblies' which were held over a period of two to three weeks in the U.S.A., the Netherlands, and India.

The secret of the *Global Maharishi Effect* is the phenomenon known to Physics as the 'Field Effect', the effect of coherence and positivity produced from the field of infinite correlation—the self-referral field of least excitation of consciousness—the field of Transcendental Consciousness, which is basic to creation and permeates all life everywhere.

Many carefully controlled experiments on the *Maharishi Effect*, the *Extended Maharishi Effect*, and the *Global Maharishi Effect* have appeared in leading scientific journals. These studies have utilized the most rigorous research designs and statistical methodologies to precisely evaluate the effect of large coherence-creating groups on standard sociological measures of the quality of life in cities, provinces, nations, and the world.

These studies have demonstrated the power of the *Maharishi Effect* to a degree of certainty that is unparalleled in the social sciences, and even in the physical sciences. ***The Maharishi Effect in itself proves the existence of the Unified Field of Natural Law and man's ability to operate from this level.***

The *Maharishi Effect* is giving rise to new knowledge and very practical programmes to improve all aspects of life. An example of this is the recent discovery of Veda and the Vedic Literature in physiology described in this book.

End of Footnote

CHAPTER II

The Human Physiology

The human physiology is a product, or expression, of Nature. It is constructed by the infinite organizing power of the laws of Nature. Therefore, all that is expressed in the human body, including all structure and function, speech and action, is the reflection of the structuring dynamics of Nature.

*Physiology
Is the
Material
Expression of
Natural Law*

The human physiology¹ has the ability to be conscious and to know itself. It also can, as demonstrated by Maharishi's Transcendental Meditation and TM-Sidhi Programme, experience finer levels of consciousness until the finest level is transcended and a pure level of infinite unbounded consciousness is reached². That level of pure knowingness is the inner Self of everyone. It is pure knowledge, wakefulness devoid of any thought, image, or fluctuation. It is unbounded, pure silence.

*Self-Referral
Pure
Consciousness*

Therefore, the most fundamental aspect of the human physiology resides in the self-referral dynamics of consciousness knowing itself. That pure level of consciousness is the source of pure knowledge, which structures all thought³ and action. It is the source of the infinite organizing power of all physiological processes, anatomical structures, and all human behaviour at the individual and social levels.

Science has glimpsed that level of Nature. In the unified quantum field theories of modern physics, it is called the Unified Field of all the Laws of Nature. It is an unmanifest field that is at the basis of all the manifest expressions of the universe—from the elementary particles, atoms, molecules, and cells, to the galactic and cosmic structures and all forms of life: plant, animal, human, etc.

The ever-expanding universe is an always changing, never the same, field of dynamism on the ground of infinite silence. This is in contrast to the never changing, ever the same field of infinite silence, the Unified Field of Natural Law, which also contains unmanifest infinite dynamism.

*Veda—
Blueprint
of Creation*

This non-changing Unified Field of Natural Law is called in Veda and the Vedic Literature, Ātmā, or Self. Since it is the source of the structure and dynamism of the universe, it must contain within its

1. The term 'human physiology' is used here in its broadest meaning and includes the mind, intellect, and ego—the sense of self.

2. The human mind is similar to an ocean which is active at its surface and more and more quiet (silent) at its depth. Through Maharishi's Transcendental Meditation (TM), the mind fathoms its own depth. The conscious mind dives inside itself and reaches its source—a state of pure silence with pure wakefulness. This is Transcendental Consciousness—Ātmā—the Self.

3. A thought is like a bubble of air starting at the bottom of the ocean (the mind), which grows as it rises to the surface. When it reaches the surface, we become aware of it. Transcendental Consciousness (the bottom of the ocean) is the source of all creative thought—the source of creative intelligence, which motivates all thought and action.

MAHARISHI'S VEDIC SCIENCE AS TRADITIONALLY RECORDED IN VEDA AND THE 36 BRANCHES OF THE VEDIC LITERATURE



Figure 2a shows Veda and the 36 branches of the Vedic Literature.

Ātmā, the source of Veda, fully awake in its potentiality is Totality—Brahm. Ātmā is lively in its full potential when its self-interacting dynamics, the 36 values of the Vedic Literature, together give rise to the structure of Veda (pure knowledge)—the Laws

OVERALL VISION OF THE PHYSIOLOGY ORGANIZED ACCORDING TO VEDA AND THE VEDIC LITERATURE

Human Body of an Individual

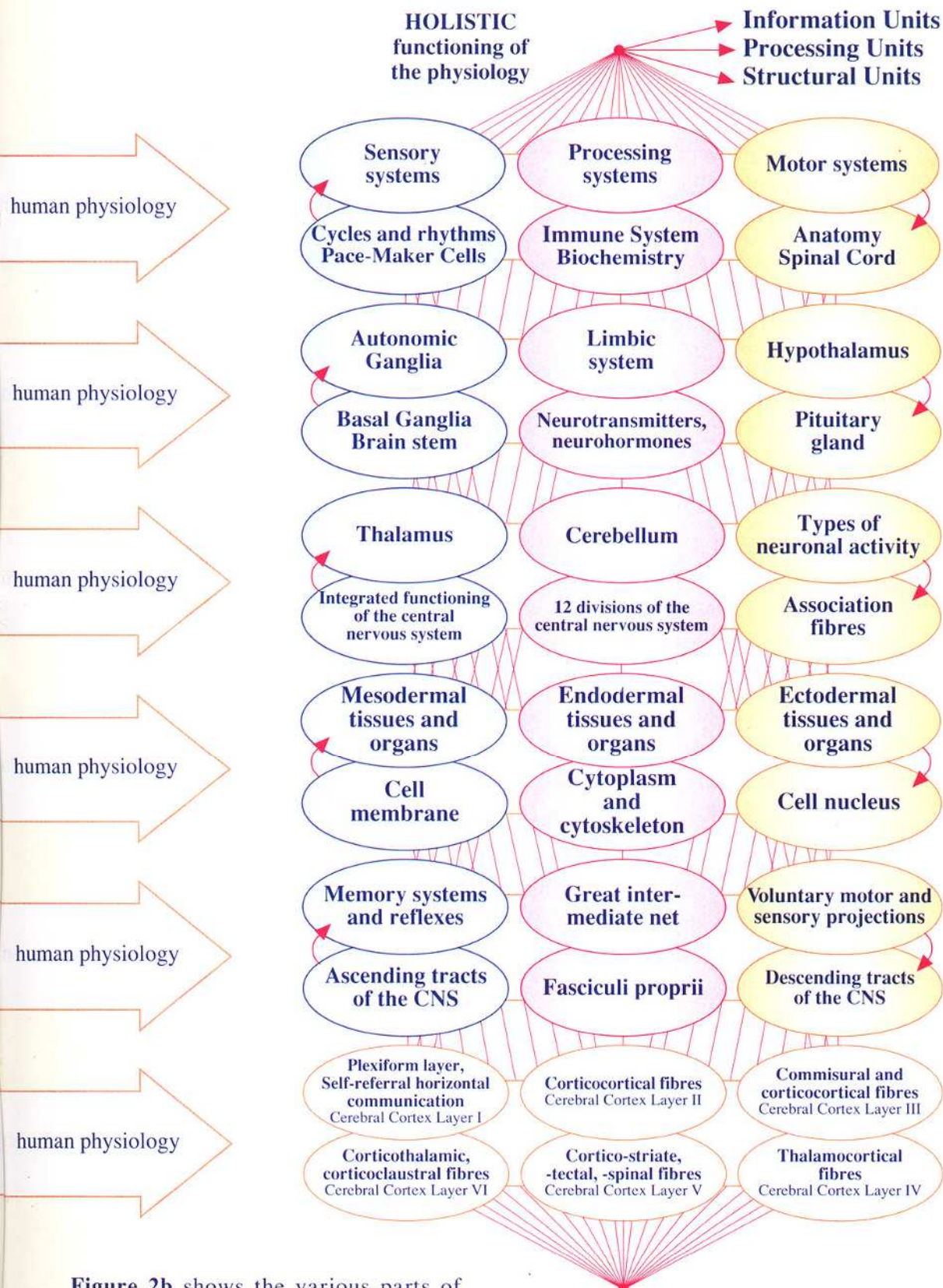


Figure 2b shows the various parts of human physiology that correlate with Veda and the Vedic Literature.

of Nature, the Constitution of the Universe—which in turn evolve into the physiology and the material creation (Vishwa) while ever remaining within the field of Ātmā. This Ātmā—Ātmā with the total memory of Veda and Vishwa within it—is Brahm, the totality—*Ayam Ātmā Brahm*.

singularity⁴ structure and dynamism. This structure is Veda. Veda is the blueprint of creation. The structure of Veda is the structure of creation—Veda is creation.

*The Human
Physiology
is Veda*

The human physiology has the ability to know itself and experience pure consciousness (Ātmā, the Unified Field) because, as will be shown in the following chapters, it has the same structure as Veda. The human physiology is Veda (see Figures 2a-2b). This is how Veda knows itself, hears itself, touches itself, sees itself, tastes itself, and smells itself. It is through that self-referral state that the human physiology, or Veda, is able to manage all its structures in all the fields of senses and action.

*Transcendental
Meditation and
TM-Sidhi
Programme*

The range of human life covers not only the expressed fields of Nature available to everyone through the gross sensory experience, but also all the subtle aspects of Nature. This includes the source of all creation (pure consciousness, the Unified Field), available to everyone in the simplest state of human awareness, through Maharishi's Transcendental Meditation and TM-Sidhi Programme.

*Experience
of Point
and Infinity*

The human physiology, through its structure and function, is capable of experiencing and perceiving specific thoughts, specific sensory or motor impressions. These are frozen moments of reality, or points in the infinitely dynamic universe—points of dynamism. On the other hand, the human mind is also able to fathom the Unified Field and experience unbounded, pure, infinite silence through the process of transcending.

*Experience
of Dynamism
and Silence
'R' and 'K'*

The whole range of possible human experience in the relative field of life, is expressed in Veda by the Sanskrit letter ऋ 'R'. 'R' represents reverberating dynamism. The individual moments of experience—the points of dynamism—are expressed by the letter क 'K'. 'K' represents the silence of the point value of dynamism, referring to specific, isolated points of possible experiences within the vast range of possible human experience. ऋ ('R') and क ('K') are infinite dynamism and infinite silence. 'R' and 'K' together make 'RK'. 'RK' is the NAME of Veda. Rk⁶ is within that total range of infinite dynamism and total silence. The knowledge of Rk is the knowledge of totality. Rk Veda⁷ is total knowledge.

*Experience
of Infinite
Silence—'A'*

The individual human physiology has the ability, through the techniques of Yoga—Maharishi's Transcendental Meditation and TM-Sidhi Programme—to experience infinite silence in its unbounded

4. The term singularity refers to the fact that the Unified Field—Ātmā—the state of pure consciousness—has no other element or aspect supporting it or mixed with it. It is oneness, unity, singularity.

5. Since everything in creation, everything in the universe, is always changing, always dynamic, the 'moments' of experience are in fact points* of dynamism. They have no dynamism, they are infinitely silent. Just as in mathematics, a line is said to be made of points that have no dimension.

6. The term 'RK' is the name of Veda—the first, **holistic** aspect of the 37 aspects of Veda and the Vedic Literature.

7. The term 'Veda' means knowledge. The term 'Rk Veda' means the knowledge of Rk.

* The term 'point' is used here in the mathematical sense.

state. This infinite silence is expressed in Veda by the sound अ 'A.' 'A' is the first letter⁸, or sound, of Ṛk Veda. According to Maharishi's Apaurusheya Bhāshya (Maharishi's commentary on Ṛk Veda), 'A' represents totality—infinity of silence containing within it all dynamism. It embodies the whole Ṛk Veda within it. It is the most condensed FORM of Ṛk Veda. This most condensed form gets elaborated in 'AK' and progressively in all syllables and verses of Ṛk Veda, and in the gaps between them (see Chapter III). Since 'A' is the first letter of Ṛk Veda, it is the first expression emerging from Ṛk, or more specifically from the 'K' of Ṛk.

In Transcendental Meditation, the individual mind starts from the point value of experience, the experience of any thought, and transcends that thought to experience the unbounded field of pure consciousness, pure infinite silence.

The process of experiencing this unboundedness emerging from the specific value of a thought, which is bound in space and time, is expressed in Veda as the emergence of 'A' from the 'K' of Ṛk.

*'K'—Point of
Silence and
Dynamism*

Ṛk Veda, being totality, represents infinite dynamism and infinite silence, both the manifest creation and the unmanifest reality at the source of all manifestations—the infinitely silent, transcendental, pure awareness, which is totality composed of an infinite number of points. The point value of silence (i.e. zero value of silence) is expressed in the 'K' which comes after the 'A,' in the second letter of Ṛk Veda. This 'K' represents infinite dynamism. Therefore, we find 'K' as the point of silence (maximum dynamism), emerging from the infinite silence of 'A', and as the point of dynamism (maximum silence), emerging from unbounded dynamism, 'R'.

*Collapse
of Infinity
to a Point*

In a similar way, when we analyze what happens in any process of perception, we find that the perception of any object, sound, smell, etc., involves two aspects: (1) the observer's attention falls on the object; (2) the sensory system of the observer detects the stimulus emerging from the object (i.e., the sound waves of an emitted sound, the photons reflected from a visual object, etc.). The first aspect in perception therefore involves the focus of attention of the subject onto an object, a sound, or a smell. This means that the unbounded, pure Self (Ātmā), pure consciousness of the subject, converges into a point value (the object of perception).

*Knowledge
Results from the
Coming Together
of the Observer,
the Process of
Observation, and
the Observed⁹*

In this way, every relative experience requires a subject coming together with an object on the level of attention as well as on the sensory level of perception. This means that, on the one hand, the infinite, unbounded Self (expressed in Ṛk Veda by the sound 'A') collapses onto a point value (expressed in Ṛk Veda by the sound 'K'), from which will originate the sequential unfoldment of the

8. The first verse of Ṛk Veda starts with: AK NI MĪ LE ...

9. In the Vedic Literature, the knower (observer) is called Ṛishi, the process of observation is called Devatā, and the object of observation (observed) is called Chhandas.

experience that the subject will make of the object. This is represented by the first syllable of Ṛk Veda: 'AK', or the collapse of 'A' onto its point value 'K'. This 'AK' ('A' collapsing into 'K') is followed by the sequential transmission of impulses through specific stations of the nervous system—from one neuron to another through the synaptic gaps separating them. These correspond in Ṛk Veda to the strings of syllables, verses and the silent Sandhis (or gaps) between them, as will be explained later.

On the other hand, the perception of any object, sound, smell, etc. involves the detection of a sensory impulse. For example, a sound reverberates with its full expression (expressed in Ṛk Veda by the sound 'Ṛ'), in the open air, goes through the outer ear, and collapses into the tympanum and ossicles of the middle ear, which represent the point value, 'K' (the 'K' of 'Ṛk').

The sequential steps leading to the complete experience of hearing a sound, including the response to this sound, unfold from the collapse of 'Ṛ' to 'K' and it is at this precise moment that the attention of the observer ('A') collapses to the point value of a specific observation 'K' (the 'K' of 'AK').

*Speech—
Verbal
Expression of
Natural Law*

It is possible to see the dynamics of the physiology in the sounds of Veda and the Vedic Literature, because human speech is the expression of the human physiology, which in its pure nature is Veda. This is how the rolling, vibrating sound 'Ṛ' expresses infinite dynamism.

The 'K,' which is the deepest stop, or collapse of the voice in the total closing of the throat and vocal cords—like a choking sound—represents the point value of dynamism coming after 'Ṛ'. 'A' is the total full opening, unbounded, non-fluctuating sound from the fully open mouth. It represents the undisturbed infinite silence. The 'K' of 'AK' becomes the point value of silence.

*Veda and the
36 Branches
of the
Vedic Literature
are the
Structuring
Dynamics of
the Physiology*

All the values of Veda and the Vedic Literature present different structuring mechanics of Ṛk Veda contained in the self-referral state of the Self, Ātmā. In its fully blossomed state of all values, Ātmā is totality, Brahm, the lively field of all possibilities. The human body is the expression of Veda. The human mind is that same expression on a subtler, more basic level. The most basic level is that of self-referral consciousness, where the totality of life is available to everyone in his own consciousness, on the experiential level through Maharishi's Transcendental Meditation and TM-Sidhi Programme, and on the physiological, cellular, and neuronal levels through reading the Vedic Literature.

*Rishi, Devatā,
Chhandas, and
Sāṁhitā in
the Physiology*

The perfect order expressed in the universe and displayed in the human physiology is the expression of the perfect order present within Veda. It is displayed in terms of its constituents: Ṛishi (the knower), Devatā (the process of knowing), Chhandas (the known), and Sāṁhitā, or the togetherness of Ṛishi, Devatā, and Chhandas. Similarly, all the

functions of the human physiology follow the scheme of four separate values of Rishi, Devatā, Chhandas, and Saṁhitā:

1. Rishi is represented by all the sensing, receiving, expressing, detecting, knowing, and observing functions and processes of the organ systems, organs, tissues, and cells of the body;
2. Devatā is represented by all the processing, transforming, and metabolizing functions of the body at all levels;
3. Chhandas is represented by the expanding, hiding, motor, giving, terminating, excreting, and secreting functions of the body;
4. Saṁhitā is represented by the holistic functioning of the physiology, which integrates the sensory-motor activities of the inner and outer values and expressions of the individual within himself and in relation to the environment, the cycles of Nature, and the cosmic cycles.

The Structure of the Human Physiology

Cells and Gaps

At the basic level of anatomical consideration, the physiology can be divided into cells, and gaps between them.

The cells have different sizes, forms, and specializations. The gaps between them can contain various types of organic or inorganic molecules, fluids, gases, etc. The gaps can be very tight, such as the tight junctions between cells belonging to a compact organ or organ system, such as the liver or muscle. They can be very wide, such as the gaps between blood cells floating in plasma, or between two distant cells that communicate with each other through body fluids, such as a kidney cell responding to a hormone secreted in the blood by the hypophysis.

These two basic units of the physiology correspond to the two basic aspects of the Vedic Literature.

It is stated in Āpastamba Shrautasūtram which belongs to Kalpa:

मन्त्रब्राह्मणयोर्वेदनामधेयम् ।

Mantra Brāhmaṇayor-Veda nāma dheyam.

(Āpastamba Shrautasūtram, 24.1.31)

Mantra and Brāhmaṇa together constitute Veda.

Maharishi explains that Mantra refers to the sounds of Veda, e.g., syllables, words, etc., and Brāhmaṇa refers to the gaps, and the dynamics of the gaps between these sounds—the structuring dynamics of Veda.

As we will see later in greater detail, the cells of the body correspond to the Mantras, and the gaps between the cells correspond to the Brāhmaṇas.

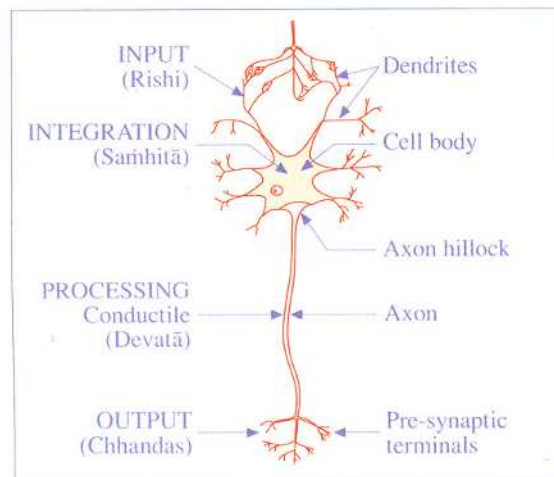


Figure 3

The Nervous System

*Rishi, Devatā,
Chhandas, and
Samhitā in
the Neurons*

Since the nervous system occupies a central role in the human physiology as the master organizer and switchboard by which all other activities of the body are integrated and orchestrated, and since a major part of this work refers to the nervous system, an introduction to the general organization of the nervous system, and how it relates to Veda and the Vedic Literature, will be given first.

The basic unit of the nervous system corresponding to the Mantra value in Veda is called a neuron (see Figure 3). A neuron is a specialized cell with four morphologically defined regions which correspond to Samhitā, Rishi, Devatā, and Chhandas in the following way:

1. The cell body, which contains the nuclear material, or DNA, is responsible for maintaining the integrity of the neuron and ultimately generating all the proteins, enzymes, neurotransmitters, and the whole structure of the neuron. It corresponds to the Samhitā value.
2. The dendrites are the receiving and input parts of the neuron. They correspond to the Rishi value.
3. The axon, with the axon hillock, are processing, transporting (conductile) parts that process the inputs and carry the electrical signal called action potential. The axon and the axon hillock correspond to the Devatā value.
4. The pre-synaptic terminals are specialized terminals that release neurotransmitters. They correspond to the Chhandas value.

*The Synaptic
Gap*

The length of a neuron can be from a few micrometers up to more than one meter. One neuron transmits information about its activity to another neuron, or up to as many as 1000 other neurons. The point at which transmission takes place between two neurons is called a **synapse**. The neuron sending the information is called a **pre-synaptic** neuron, the neuron receiving the information is

called a **post-synaptic** neuron, and the space between the two is the **synaptic gap**, or synaptic cleft (see Figure 13).

The whole dynamics, structure, and function of the nervous system revolve around the neurons and the complex dynamics, structure, and function of the gap junctions that interconnect them. These gap junctions correspond to the Brāhmaṇa value of Veda—the gaps between syllables.

In this way we see that the neuron is one expressed level of intelligence in the physiology, and the gap (synaptic gap) is another state of expressed intelligence. Even though the gaps seems like a void, each one has a structure and dynamics of its own. These specific structure and dynamics play a crucial role in the physiology and can be understood very clearly in Maharishi's Apaurusheya Bhāshya of R̥k Veda¹⁰.

*Different
Types of
Neurons*

Generally speaking, a neuron can be either a sensory neuron, an inter-neuron or a motor neuron—corresponding to Ṛishi, Devatā, and Chhandas respectively. The neurons related to the five senses and the visceral sensations are the sensory neurons. The neurons related to movement are motor neurons. The remaining are inter-neurons.

*Nerves,
Tracts, and
Fasciculi*

Collections of neuronal processes (mainly axons) subserving an identical or similar anatomical or physiological function travel together in (1) nerves, when they are located outside the cranium and vertebral column; (2) tracts, when they are located inside the spinal cord and the brain stem; or (3) fasciculi, when they are inside the brain.

*Nuclei,
Grey and
White Matter*

Collections of cell bodies of various neurons maintaining similar functions are called nuclei, or nuclear groups. Generally, aggregates of cell groups constitute the grey matter of the nervous system, while nerves, tracts, and fasciculi constitute the white matter.

*Synaptic Gaps
and Excitation
and Inhibition
of Neurons*

As discussed earlier, the transmission of a message between two neurons takes place by means of the synaptic gaps. In most cases, specialized molecules are released at the pre-synaptic terminals and detected at the post-synaptic terminals. These molecules will bind receptors and, depending on their number and the number of receptors, they will modify the properties of the receiving neuron in such a way that when a critical number of modifying factors, or inputs, is reached, the receiving neuron will be activated and will transmit a message, which will travel down its axon to reach its own terminals.

The activation or deactivation, excitation or inhibition, of any neuron or set of neurons depends on the exact number of factors influencing it. It is this number that

10. As will be described later, the synaptic gap corresponds to the gap between the syllables of Veda. Each syllable or sound (pre-synaptic impulse) collapses into a gap (silence between two sounds). The collapse is given the name Pradhvaṁsābhāva; and the gap, Atyantābhāva. The emergence of the next sound, or post-synaptic signal, is elaborated from within the gap. The elaboration of the post-synaptic signal (or sound in the Vedic Literature) depends on eight values (described later) and is given the name Anyonyābhāva. The actual emergence of the post-synaptic signal is called Prāgabdhāva (see Chapter III, Figure 7, and Chapter IV, Figure 13).

determines whether a neuron, or a set of neurons, fires, and it is the number of activated and deactivated neurons that leads to a particular situation, experience, or behaviour in general. Even simple behaviour involves the activity of the sensory, processing or motivational, and motor systems, i.e., Rishi, Devatā, and Chhandas. This phenomenon of numbers and combination of numbers is explained in the Vedic Literature by **Sāṃkhya**.

*The 12
Divisions of
the Central
Nervous System*

The entire adult central nervous system develops from six paired embryological divisions, giving 12 distinct divisions. These six divisions are: (1) the cerebral hemisphere, (2) the diencephalon, (3) the midbrain, (4) the pons and cerebellum, (5) the medulla, and (6) the spinal cord (see Figure 4). These 12 divisions encompass the whole range of human experience. The complete sensory-perceptual and motor experience is covered in these 12 divisions. They correspond to the 12 chapters of **Karma Mīmāṃsā** as will be seen later. It is also within these structures and the nerves arising from them that most of **R̥k Veda** and the **Vedic Literature** unfold.

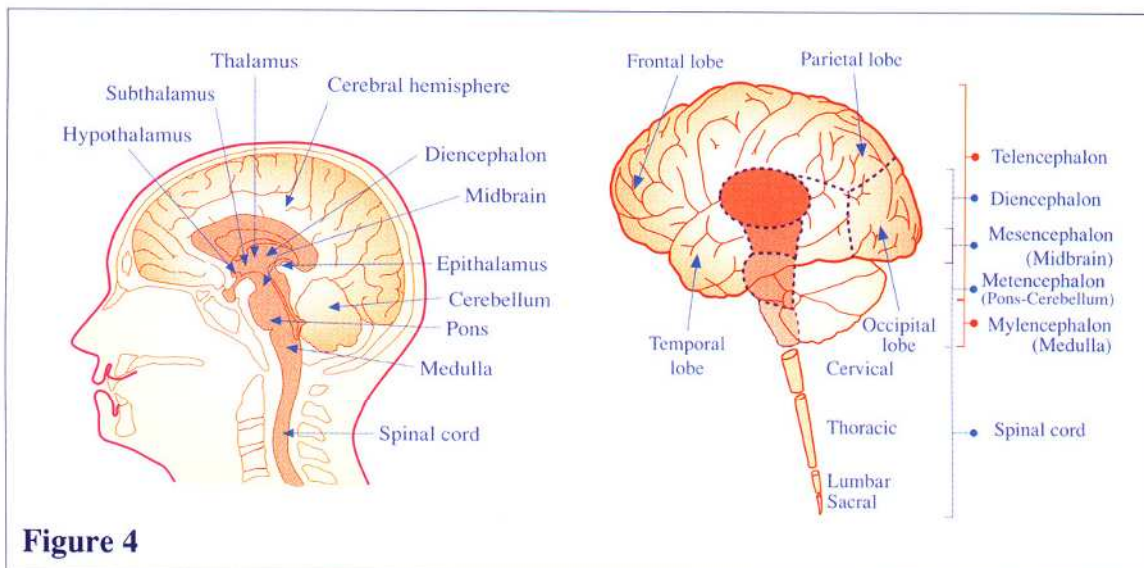


Figure 4

The Cerebral Hemispheres

*The
Cerebral
Cortex*

The cerebral hemisphere, or what is commonly called the brain, handle higher cognitive, perceptual, and motor functions. They include the cerebral cortex, commonly referred to as the 'grey matter'. The cerebral cortex has a thickness of only a few millimetres and covers the entire surface of the brain. It is divided into four lobes, named after the overlaying bones of the skull: occipital, frontal, parietal, and temporal lobes.

The lobes are highly convoluted, forming folds called gyri with grooves called sulci. Cortical areas in each lobe are histologically distinctive (i.e, they have different tissue characteristics).

*The
Association
Fibres*

The gyri of the cortex are highly reciprocally interconnected by sets of fibres, or fasciculi, called association fibres (see Figure 50). These fibres are the axons of neurons located in the cortical grey matter. Those connecting adjacent gyri are called U-fibres, and the longer connections are called fasciculi. The fibres connecting the right brain to the left brain are the corpus callosum and anterior commissure. These sets of fibres unify the activity of the cerebral cortex. They correspond to the structure and function of **Yoga** in the Vedic Literature.

*Six
Cortical
Layers*

There are six layers in the grey matter of the cerebral cortex. They correspond to the six **Prātishākhya**. They are the ultimate integrating, unifying levels of conscious experience. Deeper within the cerebral cortex are gyri which encircle the upper brain stem together with various subcortical structures. They constitute the limbic system. This is where the major metabolizing of experience and its transformations take place (including emotions and motivation). It corresponds to

*The
Limbic
System*

Kalpa in the Vedic Literature.

*The
Basal
Ganglia*

There are deep-lying nuclei in the cerebral hemispheres called basal ganglia (or striatum). They are involved in higher order cognitive aspects of motor control—planning and execution of complex motor strategies. In addition, because of their extensive connections with the association cortex and limbic structures, the basal ganglia are involved in many functions other than motor control, such as cognitive functions, memory, orientation in space, changes of behavioural set and motivation. They correspond to **Jyotish** in the Vedic Literature.

The Diencephalon

*The
Thalamus*

The diencephalon, or 'between brain', lies between the cerebral hemispheres and the midbrain. It includes the thalamus and hypothalamus. The thalamus processes and distributes the sensory information going to the cerebral cortex. It is also involved in the regulation of levels of awareness and emotional aspects of sensory experiences through a whole variety of effects on the cortex. It is located at the door between the 'outer and inner world' and lights the way in both directions. It is like a lamp at the door. The thalamus corresponds to **Nyāya** in the Vedic Literature.

*The
Hypothalamus*

The hypothalamus plays a crucial role in the control of homeostasis. It is an important station in the feedback loop regulating the balance of the 'internal milieu' of the body through the regulation of the autonomic nervous system and the modulation of behaviour through the motivational systems. The hypothalamus, which corresponds to **Vyākaraṇa** responds to inputs from the limbic system (**Kalpa**) and generalizes (expands) that response by means of releas-

ing factors. These factors activate the pituitary gland and the autonomic nervous system which correspond to the value of **Nirukta** in the Vedic Literature.

*The
Cerebellum*

Wrapping around the central surface of the brain stem (consisting of mid-brain, pons, and medulla), is a structure that looks like a small brain. It is called cerebellum. The cerebellum integrates information of the motor-sensory inputs from the spinal cord, motor information from the cerebral cortex, and inputs about balance from the vestibular organs of the inner ear. It co-ordinates the planning, timing, and patterning of action, maintenance of posture, and co-ordination of eye and head movements. It sees the specific qualities of a movement, or task, within the holistic plan of action. It corresponds to **Vaisheshika** in the Vedic Literature.

The Brain Stem

*Midbrain,
Pons, and
Medulla*

The brain stem includes the midbrain, the pons, and the medulla. Within these structures are contained constellations of neurons with mono-aminergic neurotransmitter terminals, including the reticular formation. These groups of neurons participate in the regulation of sleep-waking cycles and other biological rhythms. They are part of **Jyotish** in Vedāṅga. Within the brain stem also lie the nuclei of the cranial nerves. They belong to **Purāṇa** and **Smṛiti**.

The Spinal Cord

There are a maximum of 35 segments in the human spinal cord, each with a pair of nerves, except for the last segment, which is held by a silent fibrotic filum terminale. This makes a total of $34 \times 2 = 68$ spinal nerves.

*The
Layers
of Rexed*

The grey matter on the right and the left sides of the spinal cord has been divided histologically into 18 layers (9 on each side), called layers of Rexed. The motor and sensory tracts, or collections of axonal fibres, which carry different modalities of sensation towards the central nervous system, and the collections of descending fibres, which activate the organs of speech, action, and behaviour, surround the grey matter. These aspects of the human nervous system correspond to the loop (see following paragraphs) of **Upanishad**, **Āraṇyaka**, **Brāhmaṇa**, **Itihāsa**, **Purāṇa**, and **Smṛiti**.

Feedback Loops

The maintenance of balance in the human physiology is achieved through a very intimate functional relation between its different components.

*Continuity
within Change*

The physiology is a dynamic field of continuous transformations, which occur within sets of feedback loops that insure continuity within change. The physiology may be likened to a river—it always looks the same,

but is always new.

Different physiological feedback loops maintain various levels of balance and homeostasis. For instance, one feedback loop helps maintain the 'constancy of the internal milieu', i.e., the relative constancy of one's body temperature, blood pressure, and metabolic and hormonal activities in the face of changing environmental circumstances. Other feedback mechanisms on a broader scale maintain growth, and allow evolution, progress, and the fulfilment of everyone's aspirations for the highest achievements, while ensuring balance in society and in the environment, and harmony in every aspect of national, international, and cosmic life.

*The Thermostat:
Example of a
Feedback Loop*

The example of a thermostat regulating the temperature of a room is a good illustration of what feedback loops achieve in the physiology. When the temperature in the room falls, the thermostat activates the heating system to raise the temperature. As the temperature reaches a certain point, the thermostat shuts off the heaters. In this way, a room is kept within a certain range of temperature even though heating is continuously being put on and off.

*Homeostatic
Mechanisms*

In a similar way, for the body to function properly, a certain temperature, blood sugar concentration, blood pressure, etc. are needed. When it gets too hot or too cold, the body activates mechanisms to reduce or raise body heat. When one eats sugar, the body activates mechanisms to reduce blood sugar. These mechanisms are controlled by tight 'thermostats' or homeostatic mechanisms maintaining the constancy (within a certain range) of our internal milieu.

This phenomenon is also described in Maharishi's Vedic Science as operating continually in Nature. In order to maintain balance, every expression of Nature which might lead to a transformation, a change, or an expansion has to refer back to its source of order. This insures that evolution does not get out of balance, just as the thermostat shuts off the heaters to prevent the temperature from reaching undesirable levels.

Feedback loop systems include components similar to those of the thermostat—the heater, the thermometer, the cable that connects the thermostat to the boiler, etc. These detecting, activating, and deactivating switches and systems are similarly found in the human physiology, throughout Nature, and the Vedic Literature.

In the Vedic Literature, for example, there is a part which is responsible for expansion, called Vyākaraṇa. Expanding, however, like heating, has to be under proper control and balance to maintain wholeness. This is why the expanding value is followed by a self-referral value which is the feedback system that maintains the expansion in contact with the source. In this way, expansion happens in co-

ordination with the central intelligence that knows totality and ensures wholeness and perfect order in the affairs of its expression (e.g., the room does not get too hot, blood pressure and blood sugar remain within range).

In this case, the Vedic Literature has a name for self-referral; it is Nirukta. It also has a name for expression or expressing; it is Shikshā. The loop to which Shikshā, Vyākaraṇa, and Nirukta belong also has a name. It is called Vedāṅga.

In this way, the 36 aspects of the Vedic Literature are divided into loops made out of six aspects each. They will be further elaborated in the following paragraphs.

These feedback, or cybernetic systems in the physiology directly correspond to the six loops of the Vedic Literature (see Chapter III and Figures 2a-2b) as follows:

*Upa-Veda
in the
Physiology*

1. The first loop arises as a set of systems which divides the holistic physiology into six highly interrelated general categories (see Chapter V, Sections 1-6):

- a) all that is pertaining to the sensory, wakefulness (Ṛishi) value—(Sāma Veda);
- b) all the transforming, processing, creative (Devatā) values—(Yajur-Veda);
- c) all the expanding, hiding, moving, acting (Chhandas) values—(Atharva Veda);
- d) all that is related to structure and relationships of structure or anatomy—(Sthāpatya Veda);
- e) all the biochemical processes—(Dhanur-Veda);
- f) all the physiological activities, cycles, and rhythms—(Gandharva Veda).

These Vedic Sciences relate the individual physiological rhythms to the cosmic rhythms (Gandharva Veda), the individual physiological transformations and biochemistry to the cosmic transformations (Dhanur-Veda), and the individual physiological structure and anatomy to the anatomy of the universe (Sthāpatya Veda).

*Vedāṅga
in the
Physiology*

2. The second loop is the system regulating homeostasis and the internal milieu. It includes the autonomic nervous system, the hypothalamus, the limbic system, and the structures involved in biological rhythms (including the circadian rhythm and sleep, dream, and waking). This system corresponds to the loop of Vedāṅga (see Chapter V, Sections 7-12). The term Vedāṅga means body of Veda and it is fitting that the structures in the physiology corresponding to Vedāṅga fulfil the role of maintaining the body in a state of balance.

*Upāṅga
in the
Physiology*

3. The third loop is the system which interacts between the outer and inner milieus and regulates the fields of thought, speech, and action. It is the system responsible for all our voluntary and conscious activities and cognitive functions, including our ability to know, analyze, syn-

thesize, and act in a co-ordinated, purposeful, and meaningful way. The central nervous system (excluding the autonomic nervous system), and parts of the brain stem and the spinal cord, fulfil that function. This system corresponds to Upāṅga, which are supportive, subordinate aspects of the body of Veda (see Chapter V, Sections 13-18). The six aspects of Upāṅga are also called the six Darśhanas, commonly known as the six systems of Indian philosophy. This points to their cognitive character, which is related to logic, reasoning, and higher levels of experience and understanding.

*Āyur-Veda
in the
Physiology*

4. Every one of the six systems of loops has within it certain predominant qualities (see Figure 2a) such as receiving, transforming, and expanding components, with Ṛishi, Devatā, and Chhandas values that feed back towards a new expansion, transformation, and expression, which form sets of closed loops. This keeps all the systems in a homeostatic balance in the face of all possible disturbances.

The nervous system in many ways orchestrates the activities of all the other systems of the physiology, including the cardiovascular, pulmonary, gastro-intestinal, etc. These systems and their activities are also structured on the basis of Veda. Their structure and function is further elaborated in Āyur-Veda (see Chapter V, Sections 19-24).

The science of Āyur-Veda provides the holistic knowledge of how to maintain balance in mind and body, prevent imbalance from arising, and re-establish balance and total health when they are threatened. Āyur-Veda is Brahma Vidyā—knowledge of totality. It is the knowledge of life in every one of its aspects. It is also described by His Holiness Maharishi Mahesh Yogi as the knowledge of the span of life, from the infinitesimally small instants of existence to eternity; all on the basis of their wakefulness in the quality of self-referral infinity.

आयुर्वेदोऽमृतानाम् ।

Āyur-Veda Amṛitānām

(Charaka Saṁhitā, 25.40)

Āyur-Veda belongs to those who are immortal. (Anyone who knows Āyur-Veda is established on the level of immortality).

In this respect, Āyur-Veda can be seen as that total knowledge which allows perfect balance to be maintained in all the physiological systems—structuring immortality.

Total knowledge of Āyur-Veda means that whatever little span of life is under consideration, it is seen as an inseparable part of infinity. Anyone who has total knowledge of Āyur-Veda is naturally established on the level of immortality.

There are also six values of Āyur-Veda which form the fourth loop of the Vedic Literature. This loop takes into consideration the whole range of physiological

activities from the standpoint of Saṁhitā of Ṛishi, Devatā, and Chhandas and acts as the balancing, unifying, integrating quality that puts all the rhythms, the laws, and their relationships together, creating an immortal whole that is more than the sum of its changing parts. It makes the collectedness of all the laws of Nature lively in human physiology, in human mind, and in human consciousness.

*Brāhmaṇa
in the
Physiology*

5. The fifth loop includes the spinal cord, parts of the brain stem, and the peripheral and cranial nerves. It is responsible for directly activating the end organs of action, collecting all sensory experiences, and relating it to the subject, or Self, and includes all reflex behaviour. This system corresponds to the loop of Upanishad, Āraṇyaka, Brāhmaṇa, Itihāsa, Purāṇa, and Smṛiti (see Chapter V, Sections 25-30 and Figures 68-74). These branches of the Vedic Literature deal with all the specific values of experience, speech, and behaviour, and relate them to the Self, just as the corresponding physiological systems do.

*Prātishākhya
in the
Physiology*

6. The supreme level of unification and integration occurs in the cerebral cortex. The six layers of the cortex are intimately connected, forming an integrated structure, which puts together all values of unification and diversification of thought, speech, and action. They correspond to the last six aspects of the Vedic Literature, the six Prātishākhya (see Chapter V, Sections 31-36). With the fully awake cerebral cortex, or Prātishākhya, the physiology experiences and expresses the totality, or Saṁhitā value of Ṛishi, Devatā, and Chhandas, together with their fully integrated point values. The physiology that has all the loops and their integration lively on the basis of the perfect order and flow of Natural Law available in Veda and the Vedic Literature is that physiology, that Self, which is in a state of silent dynamism. Total silence and total dynamism together, when fully awake, become the practical reality of daily life. This Self, Ātmā, is Brahm, totality—‘*Ayam Ātmā Brahm*’—a state of complete Enlightenment.

CHAPTER III

The Vedic Literature

Traditionally, Veda and the Vedic Literature are held to be the total knowledge of life and creation. They have been transmitted in the oral tradition of the Vedic families in India for thousands of years. In recent times, Veda and the Vedic Literature have been recorded in book form. Many commentators over the centuries have looked at the Vedic Literature from different perspectives, depending on their interests and their level of knowledge, experience, and understanding.

Commentators

*Maharishi's
Commentary
and the
Tradition of
Vedic Masters*

In the past 38 years, the complete knowledge of Veda, its structuring dynamics in the Vedic Literature, and its infinite organizing power have been discovered by His Holiness Maharishi Mahesh Yogi, who received supreme wisdom of Veda from his master, His Divinity Swāmi Brahmānanda Saraswati, Jagad-Guru, Shankarāchārya of Jyotir-math, Himalayas, a shining light in the line of the great teachers of the Holy Tradition of Masters, including Vasishtha, Vyāsa, Shankara, and their disciples.

*Veda Is
Structured in
Consciousness*

*R̥k Veda—
Collectedness
of All the Laws
of Nature*

*Relationship
of Human
Physiology
and the Vedic
Literature*

*Self-referral
Quality of
Consciousness
Connects both
Veda and
Physiology*

Maharishi has explained that Veda is uncreated and eternal. It is the fluctuations of pure consciousness. In the Vedic Literature, pure consciousness is called Ātmā. Pure consciousness, or Ātmā, is a state of pure Being, an unmanifest reality of pure existence, unboundedness and singularity. It is the totality of all possibilities, infinite silence and infinite dynamism, unboundedness and point values. It is a self-sufficient and self-referral state (depending only on itself and referring only to itself). All manifestations in creation emerge from it and submerge into it. This emergence and submergence, creation and dissolution, as well as all possible interactions in the manifest universe, are conducted by laws which could be called the laws of Nature. All the laws of Nature are contained in pure consciousness, Ātmā. Maharishi discovered Veda to be the collectedness of all the laws of Nature. He discovered the self-referral, invincible structure of Veda, which provides from within itself, and through the sequence of sounds and gaps within it, its own uncreated commentary. He explained that the structure of Veda and the Vedic Literature corresponds to the structure of all

the laws of Nature, which are the source of all expressions and laws of the entire creation, from the quantum-mechanical level to all the manifest levels of elementary particles, atoms, cells, biological systems, planetary and cosmic life, and the entire universe.

*Human
Physiology—
the Expression
of Veda*

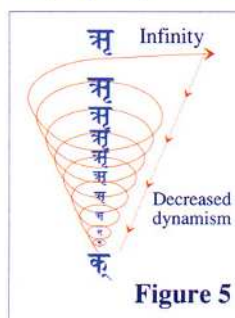
Maharishi furthermore described the human body and mind as being the embodiment of Veda, the living replica of Natural Law, emerging from the self-referral quality of pure consciousness.

In order to understand the relationship of the human physiology to Veda, it will be good to review first the structure of Veda.

The most fundamental aspect of the Vedic Literature, R̥k Veda, represents the eternal self-referral dynamics of consciousness knowing itself. The very structure of the sounds of R̥k Veda, (syllables, verses, chapters, and the gaps between each syllable, verse, etc.) is the embodiment of the eternal dynamism and silence at the basis of the infinite organizing power of Natural Law¹.

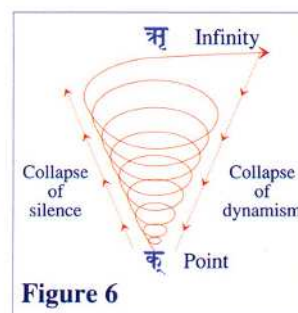
R̥k Veda means Veda of R̥k, Knowledge of R̥k

R̥k Veda means Veda of R̥k—knowledge of R̥k. R̥k is a word whose pronunciation displays dynamism from infinity to a point—ऋऋऋऋऋ (R̥R̥R̥R̥R̥R̥) displays dynamism



and क् (K) displays the stop of dynamism. क् (K) is a syllable whose pronunciation stops the flow of speech; क् (K) stands for stop or point value.

The relationship between ऋऋऋऋऋ (R̥R̥R̥R̥R̥R̥) and क् (K) displays the collapse of dynamism to a point.



*R̥k Represents
Dynamism
and Silence*

This collapse displays decreasing dynamism; that means increasing silence until dynamism reaches its minimum value at क् (K), which displays maximum silence (see Figure 5).

From the structure of R̥k it is clear that maximum value of dynamism is displayed by ऋ (R̥), and maximum value of silence is displayed by क् (K).

The structure of R̥k, as displayed by the sound R̥k, stands for collapse—collapse of dynamism from infinity to a point.

It is obvious that at क् (K) dynamism is minimum, which means that silence is maximum, and at ऋ (R̥) dynamism is maximum and silence is minimum.

*R̥k Expresses
Total Knowledge
and its Infinite
Organizing
Power*

Thus R̥k Veda is Veda of all possible transformations of the collapse of the dynamism aspect of the ultimate reality, and also of all possible transformations of the collapse of the silence aspect of the ultimate reality. R̥k presents dynamic silence. R̥k Veda is the knowledge of R̥k, the knowledge of collapse of silence into dynamism and dynamism into silence (see Figure 6).

1. The totality of all the laws of Nature and their infinite organizing power is called Brahm.

Just as silence stands for the unmanifest, so dynamic silence means dynamic unmanifest; it means that the unmanifest is dynamic. Ṛk Veda is the knowledge of the dynamism of the silent, unmanifest reality, the field of Transcendental Consciousness.

Scholars should note that this aspect of knowledge, this level of reality, is the subject matter of Yoga²—silence (see Chapter V, Section 16 and Figures 50–58)—and Karma Mīmāṃsā²—dynamism (see Chapter V, Section 17 and Figure 59). In their togetherness, each neutralizing the other, the reality of the unmanifest (unmanifest collapse of dynamism and unmanifest collapse of silence) arises.

Thus, Ṛk demonstrates the potential of dynamism and the potential of silence co-existing in the reality of the unmanifest transcendental reality at the source of all creation.

Thus, Ṛk demonstrates the ultimate reality in its self-referral state—total reality in its self-referral state. This reality of the Self is Brahm³—*Āyam Ātmā Brahm* (*Māṇḍūkya Upanishad*, 2); ‘*This Ātmā (Self) is Brahm (totality)*’.

Thus, Ṛk Veda is pure wakefulness⁴—fully awake self-referral level of reality—singularity⁵, totality, one unbounded ocean of consciousness in motion—and this is the reality of my Self, your Self, and all that there is. This is unfolded in Vedānta² (see Chapter V, Section 18 and Figure 60).

Yoga, Karma Mīmāṃsā, and Vedānta, as well as all the other aspects of the Vedic Literature, are together expressed in Ṛk. These Vedic disciplines (the Vedic Literature) constitute the organizing power of the pure knowledge latent within Ṛk.

*Ṛk Veda
is both
Science and
Technology*

On one hand, the syllable Ṛk contains within it the whole field of pure knowledge (theory); and on the other hand, it contains the whole field of the organizing power of pure knowledge (applied aspect). Thus it is clear that Ṛk is the one-syllable expression of the science and technology of the ultimate reality—pure wakefulness, pure consciousness—the Self.

The Self, both on the individual level (Ātmā) and on the cosmic level (Brahm) is self-referral—pure wakefulness, pure consciousness.

*Knowledge of
Ṛk Enlivens
all Possibilities
in the Knower*

Ṛk is the one-word expression of the total value of science and technology, and the full value of Ṛk enlivened in individual consciousness makes the individual an embodiment of all knowledge and the infinite organizing power of pure knowledge.

2. One of the 36 aspects or disciplines of the Vedic Literature.

3. Brahm means totality, all inclusive reality which takes in its scope all possibilities, all qualities, and all values: manifest and unmanifest, small and big, silent and dynamic, ...

4. In the following pages, it is explained how wakefulness results from the co-existence of silence and dynamism.

5. The term singularity refers to the fact that the Unified Field—Ātmā—the state of pure consciousness, is always equal to itself. It has no other element or aspect supporting it or mixed with it. It is oneness, unity, singularity.

The knower of Ṛk is the knower of reality—Brahm—about which the Bhagavad-Gītā⁶ says:

एषा ब्राह्मी स्थितिः पार्थ नैनां प्राप्य विमुह्यति ।

Eshā Brāhmī sthitiḥ pārtha nainām prāpya vimuhyati.

(Bhagavad-Gītā, 2.72)

This is Brahman Consciousness—Unity Consciousness.

Once achieved it is never lost. Life in enlightenment—

life of the individual as a lively field of all possibilities—

achievement of anything through mere desiring.

Revival of
Knowledge
of Ṛk

This is life in fulfilment—the goal of all life enjoyed in the practicalities of daily living. This is Maharishi's vision of Ṛk: full revival of complete knowledge—the unfoldment of total science and technology.

After thousands of years, this complete knowledge of Ṛk has been revived. It needed a *Maharishi* of the scientific age to revive complete knowledge. This knowledge is Maharishi's contribution to everyone for all generations to enjoy full enlightenment—Heaven on Earth.

This level of reality is available to everyone in his own Transcendental Consciousness, where consciousness is fully awake in its pure wakefulness, unboundedness—fully awake within itself, self-referral singularity, the silent potential of all dynamism—lively silence, unmanifest pure creativity, pure field of intelligence—the field of pure knowledge, where knower, process of knowing, and known are in their unified state—*Saṁhitā* (togetherness or unified state) of *Ṛishi* (knower), *Devatā* (process of knowing), and *Chhandas* (known)—*Ṛk Veda*.

Unfoldment of
Ṛk through
Transcendental
Meditation

When human awareness, through Maharishi's Transcendental Meditation, settles down, it identifies itself with this level of reality (*Ṛk Veda*). In its pure wakefulness, human awareness comprehends the details of its own structure, and finds that the silent value of its own nature co-exists with the dynamic value of its own nature. This co-existence of silence and dynamism presents a picture of silence partaking of dynamism and dynamism partaking of silence.

The phenomenon of silence ceaselessly partaking of dynamism and dynamism ceaselessly partaking of silence, within the structure of pure wakefulness, displays creativity within the singularity, which forms the basis of all the creative and evolutionary processes of the diverse universe.

This presents the nature of pure wakefulness in terms of one unified wholeness,

6. The Bhagavad-Gītā is one of the sections of one of the aspects of the Vedic Literature (*Mahābhārata* of *Itihāsa*). The Bhagavad-Gītā has often been described by Maharishi as the 'pocket book' edition of the Vedic Literature, containing total knowledge.

which is silence and dynamism at the same time—the structure of singularity in terms of duality.

*Unity
and
Diversity*

This presents the mechanics of singularity evolving into duality without losing its essential nature, singularity. This level of intelligence, in itself, is the source of creation—it displays the mechanics of creation.

Co-existence of silence and dynamism gives us the mechanics of how singularity is duality—how pure wakefulness is both singularity and duality.

Here, within the structure of pure wakefulness, we see singularity in terms of duality. Here, within the structure of pure wakefulness, we see the mechanics of creation—we see duality within the structure of singularity.

This gives us the understanding of the mechanics of creation being lively within the structure of singularity.

It is interesting to note that wakefulness is wakefulness because these two contradictory values exist within it.

*Wakefulness,
Alertness—
All Possibilities
in R̥k*

Wakefulness is pure alertness. This alertness is due to the co-existence of two opposite values—silence and dynamism. For silence and dynamism to entertain each other, each must be supremely alert, lest it be neutralized by the other.

This explains why singularity, the ultimate reality, is pure wakefulness, pure consciousness.

Pure wakefulness, being awake in the two values within its structure, exhibits the quality of lively intelligence, the quality of consciousness. By virtue of its wakeful nature, it knows itself completely. The interchange of silence and dynamism within the nature of pure wakefulness demonstrates the mechanics of creation—it explains how unity is duality and how the process of evolution is sustained within it.

Pure wakefulness locates the dynamics of creation within itself and locates structures of creation within its own unmanifest self-referral state—dynamic silence. It comprehends the collapse of dynamism into silence and silence into dynamism.

It sees and hears the sound of this eternal interaction—the Shruti, the Primordial Sound. Pure wakefulness in its self-referral state is the seer of R̥k—it is R̥k itself.

Pure wakefulness is R̥k, the structure of total knowledge, the one-word expression of Veda—the name of Veda, which contains the whole form of Veda within its structure; and Veda, the dynamics of R̥k, is the mechanics of creation and evolution in that one unbounded ocean of consciousness—pure wakefulness. Thus we find that the structure of Veda is available in the structure of Transcendental Consciousness.

It is this reality that makes human consciousness the expression of pure knowledge, Veda—the lively field of all possibilities.

*Maharishi's
Vedic Science
and
Technology*

Maharishi's Vedic Science and Technology is the science and technology of this Vedic level of reality, which is competent to create perfection in all areas of life, because life is an expression of unified wholeness of total reality, the eternal dynamic silence—R̥k.

According to Maharishi's Apaurusheya Bhāshya, the structure of Veda provides its own commentary—a commentary which is contained in the sequential unfoldment of Veda in its various stages of expression. The knowledge of total Veda—the complete dynamics of the unified field of consciousness and the mechanics of symmetry breaking through which this unified field sequentially creates the manifest universe—is contained in R̥k Veda (see Figure 8).

The precise sequence of sounds is highly significant; it is in the sequential progression of sound and silence that the true meaning and content of Veda reside—not on the level of intellectual meanings ascribed to Veda in the various translations. The sounds are the syllables, and the silence is the gaps (Sandhis) between syllables (Aksharas), verses (R̥ichās), stanzas (Sūktas), etc.

*Dynamics
of the Gaps*

Maharishi locates the fundamental significance of Veda and the Vedic Literature as emerging from the dynamics of the gaps. The profound significance of Veda and the Vedic Literature is that they are the expression of the laws of Nature, which continuously transform one state into another, maintaining order and evolution on the basis of their eternal, immortal, self-referral reality. These mechanics of transformation are located in the gaps. It is in the full understanding of the dynamics of the gap that the understanding of the holistic, all-inclusive character of Veda and the Vedic Literature lies.

The gap has four values (see Figure 7):

1. A silent point value of all possibilities, called **Atyantābhāva**.
2. The structuring dynamics of what happens in the gap, called **Anyonyābhāva**.
3. The mechanics by which a sound or a syllable collapses into the point value of the gap—sound becomes silence—i.e., the end of the syllable. This is called **Pradhvaṁsābhāva**.
4. The mechanics by which a sound emerges from the point value of the gap, i.e., the emergence of the following syllable. This is called **Prāgabhāva**.

*Total R̥k Veda
Expressed in
the First
Syllable 'AK'*

The complete knowledge of Veda contained in the first Sūkta⁷ (stanza) is also found in the first R̥ichā (verse)—the first 24 syllables of the first Sūkta. This complete knowledge is again contained in the first Pāda⁸, or first eight syllables of the first R̥ichā,

7. A Sūkta is like a poem or stanza made of several verses (R̥ichās). The first Sūkta of R̥k Veda has nine R̥ichās.

8. A Pāda is a phrase in a verse (R̥ichā). The first verse (R̥ichā) of R̥k Veda has three Pādas of eight syllables each (see Figure 8). There are therefore 24 syllables in the first R̥ichā.

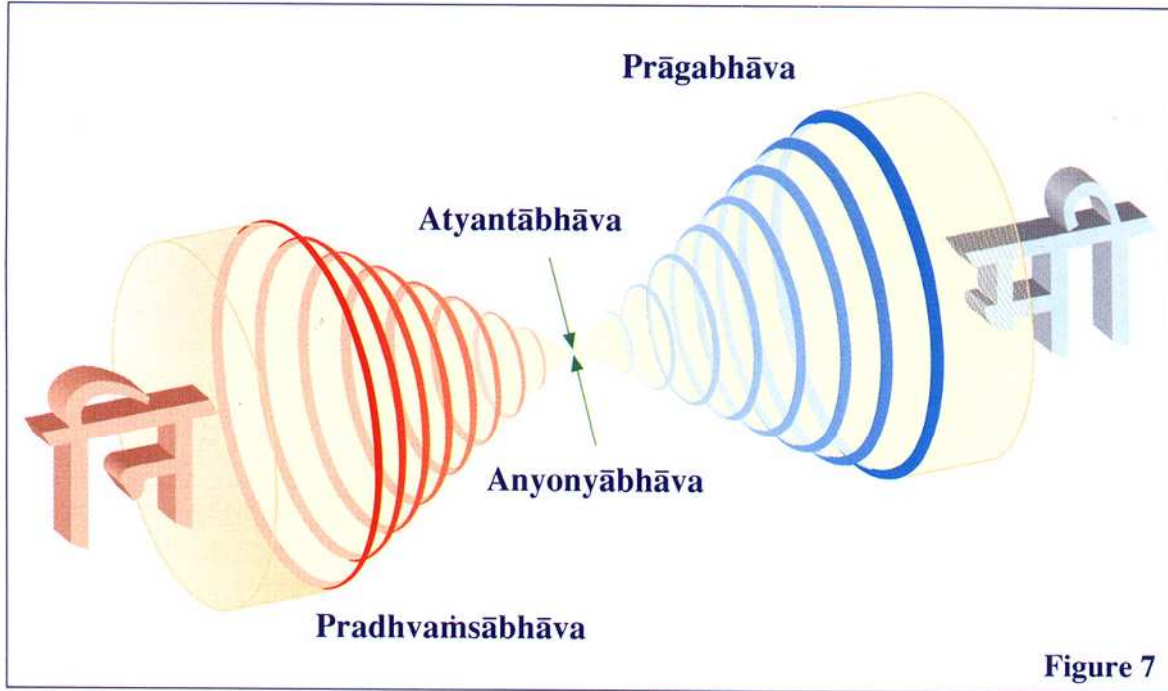


Figure 7

and is also found in the first syllable of Veda, 'AK', which contains the total dynamics of consciousness knowing itself (see Figure 8).

The first syllable of Ṛk Veda, 'AK', describes the collapse of fullness of consciousness ('A') within itself to its own point value ('K'). This collapse, which represents the eternal dynamics of consciousness knowing itself, occurs in eight successive stages. In the next stage of unfoldment of Veda, these eight stages of collapse are elaborated in the eight syllables of the first Pāda, which emerges from, and provides a further commentary on, 'AK'. These eight syllables correspond to the eight Prakṛitis, or eight fundamental qualities of intelligence, which constitute the divided nature of pure consciousness (see Figure 8).

*The Order of
Unfoldment
is Sequential*

The first Ṛichā, comprising 24 syllables, provides a further commentary on 'AK'. The eight-syllable structure of the first Pāda now appears three times. The first Pāda expresses the eight Prakṛitis (fundamental qualities of intelligence) with respect to the knower, or Ṛishi (observer) quality of pure consciousness. The second Pāda expresses the eight Prakṛitis with respect to the process of knowing, or Devatā (process of observation) quality of pure consciousness. The third Pāda expresses the eight Prakṛitis with respect to the known, or Chhandas (observed) quality of pure consciousness. Together, these three Pādas comprise the first Ṛichā (verse) of Veda, which represents another complete stage in the sequential unfoldment of knowledge (see Figures 8 and 10–12).

*Maharishi's
Commentary
on Ṛk Veda*

The subsequent eight Ṛichās complete the first Sūkta—the next stage of sequential unfoldment of knowledge in Veda. These eight Ṛichās consist of 24 Pādas, comprising $8 \times 24 = 192$ syllables.

PĀDA 1—*RISHI PRAKRITI*

PĀ

Complete knowledge

अग्निम्
— AGNIM

ईले

पुरोहितं
PUROHITAM

यज्ञस्य
YAGYASYA

Man2

स्य

ॐ व स्तमः द

DA 14

FIRST MANDALA

12345678911111111112222222222333333333344444444445555555555666666666677777777778888888888
0123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

TENTH MANDALA

123456789111111111112222222222333333333344444444445555555555666666666677777777778888888888
0123456789012345678901234567890123456789012345678901234567890123456789012345678

Maharishi's Commentary on Rk Veda

orderly and symmetrical, displays the total potential of Natural Law within the structure of Veda and is the source of order and symmetry in the whole universe.

So far, whatever commentaries are available on Veda, all commentators have commented on the Aksharas or syllables, the Shabdās or words, the Pādas or phrases, the Rīchās or verses, the Sūktas or hymns, etc. These commentaries do not bring to light the value and meaning of the gaps. The gaps actually contain the mechanics of transformation. Creation is a phenomenon of constant transformation. Transformation or evolution is the reality of existence. The mechanics of transformation take place in the unmanifest field. That is why when this field of transformation, within the reality of the gap, was not brought to light by the commentators, the whole field of Pure Knowledge and its structure remained out of sight. How creation emerges from Veda—how Veda structures itself into Vishva (creation)—remained out of sight. The relationship of the unmanifest with the manifest, and how consciousness structures itself into the structure of Veda remained out of sight. How Veda is the whole universe remained out of sight, how Ātmā is Brahm remained out of sight, how the part is the whole remained out of sight, how point is infinity remained out of sight, how mortality is essentially immortality remained out of sight. The infinite unbounded nature of life remained out of sight, Pure Knowledge remained out of sight. Total potential, freedom, bliss was lost. Ignorance and suffering became real.

Now, with the cognition of the reality of the gap, all that was

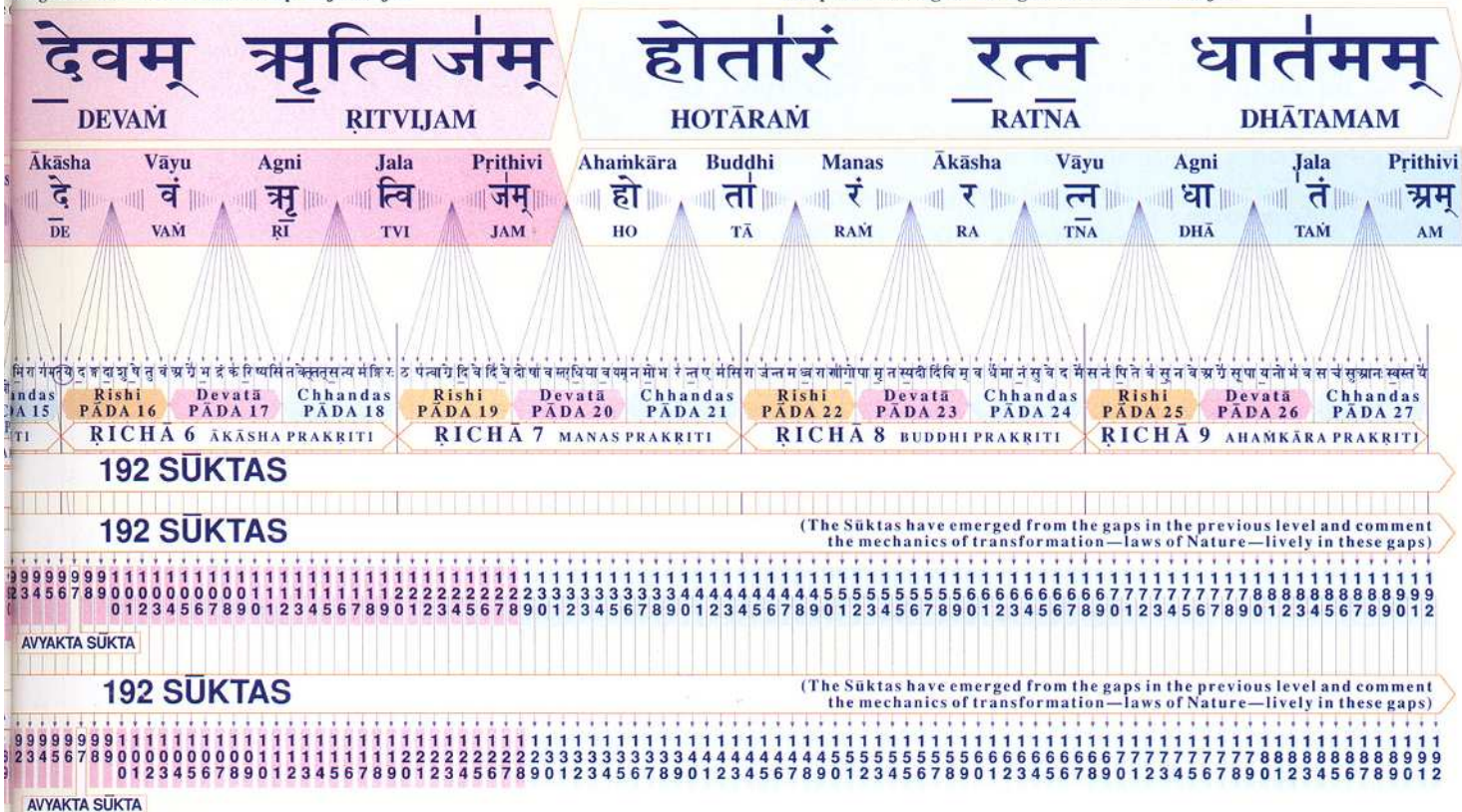
DA SAMHITĀ (APAURUSHEYA BHĀSHYA)

PĀDA 2—DEVATĀ PRAKRITI

the eightfold nature of the relationship subject/object

PĀDA 3—CHHANDAS PRAKRITI

Complete knowledge of the eightfold nature of the object



out of sight becomes a concrete vision. This is the time when full enlightenment is available to everyone, and now the total potential of Natural Law is at home with everyone. With Maharishi's Vedic Science and Technology, the Age of Enlightenment is available to everyone, everywhere. This unique cognition identifies the structuring dynamics of Veda to be the structuring dynamics of consciousness, of the physiology, and of the entire creation. It explains that total knowledge (the Samhitā of Rishi, Devatā, and Chhandas) and its infinite organizing power are completely contained, expressed, and demonstrated in the sequential unfoldment of the structure of Rk Veda. This orderly, sequential unfoldment of Rk Veda is available to anyone at any time, intellectually in Maharishi's Apaurusheya Bhāshya, and experientially in one's own Transcendental Consciousness through Maharishi's Transcendental Meditation.

Constitution of the Universe

The different levels of elaboration shown in the illustration above give a holistic vision of Nature's total intelligence, which eternally resides at the unmanifest basis of creation and is continuously giving rise to its own self-elaborating structure of complete knowledge, in Rk Veda. This structure is the Constitution of the Universe, which ensures flawless administration of the universe and upholds its evolutionary process.

Inherent Dynamism of 'AK', One Word Expression of Total Veda

The total range of knowledge and infinite organizing power lively within Ātmā—the self-referral consciousness of everyone—initially expresses itself in a highly compactified, one-syllable version of total Veda, the single Akshara, 'AK',

denoting the balanced state of pure wakefulness that has to exist between the opposite values of infinity ('A') and point ('K') lest they neutralise each other. The inherent dynamics of this seed form of Veda are seen sequentially progressing into a single straight line of Pure Knowledge, the first Richā or verse of Rk Veda, which carries the characteristics of absolute order and thereby serves as a precise index for the entire structure of Rk Veda to arise.

Three Levels of Self-Elaboration Illustrated Above

From the 24 Sandhis (unmanifest gaps) of the first Richā (verse) emerge the corresponding 24 Pādas (phrases) of the next eight Richās (Richā 2-9), which provide the **first level of self-elaboration** of Rk Veda. Richās 2-9 are a precise commentary on the mechanics of transformation present within the 24 gaps of the first Richā.

The **second level of self-elaboration** arises from the 192 Sandhis (gaps) between the 192 Aksharas (syllables) of Richās 2-9. They give rise to the corresponding 192 Sūktas (hymns) of the first Maṇḍala of Rk Veda, a circular, cyclical, and eternal structure that comments upon the mechanics of transformation inherent in the 192 gaps of Richās 2-9.

In the **third level of self-elaboration** the 192 Sandhis (gaps) between the 192 Sūktas (hymns) of the first Maṇḍala give rise to the corresponding 192 Sūktas of the tenth Maṇḍala, which again is a circular, cyclical, and eternal structure that precisely fills the gaps of the first Maṇḍala and serves as a commentary on the mechanics of transformation between the Sūktas of the first Maṇḍala.

According to Maharishi's Apaurusheya Bhāshya (Maharishi's commentary of Ṛk Veda), these 24 Pādas of eight syllables each elaborate the unmanifest eight-fold structure of the 24 gaps between the syllables of the first Ṛichā (verse). Each Ṛichā consists of three Pādas, which, as in the first Ṛichā, present the structure of self-interaction with respect to the Ṛishi (observer), Devatā (process of observation), and Chhandas (observed) qualities of pure consciousness respectively (see Figure 8).

*Structuring
Dynamics
of Ṛk Veda
in the Vedic
Literature*

Ultimately, in subsequent stages of unfoldment, the 192 syllables of Ṛichās 2-9 of the first Sūkta (stanza) are elaborated in the 192 Sūktas which constitute the first Maṇḍala (circular, cyclical, eternal structure) of Ṛk Veda; and the 192 Sūktas of the tenth Maṇḍala emerge from the gaps between these 192 Sūktas. The remaining Maṇḍalas, Maṇḍalas 2-9 (corresponding to the eight Prakṛitis), emerge sequentially from the gaps between the Ṛichās of the first Sūkta. This gives rise to the rest of Veda and the entire Vedic Literature (see Figures 8 and 20).

This perfectly orderly, eternal structure of knowledge—Veda—has been preserved over thousands of years in the Vedic tradition of India. The complete knowledge of Veda and its profound significance for life has been revived and understood in a scientific framework by Maharishi Mahesh Yogi in his Vedic Science and Technology.

*Veda and the
36 Aspects
of the Vedic
Literature*

From Ṛk Veda, the complete and self-sufficient Saṁhitā quality of the Vedic Literature, emerge the other 36 aspects or branches of the Vedic Literature. They represent the structuring dynamics of Ṛk Veda. In this book we refer to Ṛk Veda as 'Veda' and to all the other 36 aspects as 'the Vedic Literature'.

Ṛk Veda

As Ṛk Veda has a structure which is an eternal, **holistic**, all-time reality on its own level, the structuring dynamics of Ṛk Veda have to be self-referral. Therefore, all the other 36 aspects of the Vedic Literature are self-referral. Each of these 36 values of the Vedic Literature assumes nevertheless one predominant quality as its specialty. In the remaining part of this chapter, all the 36 branches (aspects) of the Vedic Literature will be briefly introduced. Their characteristic feature (speciality) will be highlighted in bold letters (see also Figure 2a). The first three are:

1. Sāma Veda

a. Sāma Veda, which expresses Saṁhitā quality of consciousness with a predominantly Ṛishi value. Sāma Veda is all that is pertaining to Ṛishi. It is **flowing wakefulness**.

2. Yajur-Veda

b. Yajur-Veda, which expresses Saṁhitā quality of consciousness with a predominantly Devatā value. Yajur-Veda is all that is pertaining to Devatā. It is **dynamic creativity**.

*3. Atharva
Veda*

c. Atharva Veda, which expresses Saṁhitā quality of consciousness with a predominantly Chhandas value. Atharva Veda is all

that is pertaining to Chhandas. It is **reverberating wholeness**.

These three values, Sāma, Yajur, and Atharva therefore constitute the first holistic aspect of consciousness with reference to Ṛishi, Devatā, and Chhandas (see Chapter V, Sections 1-3). Sāma, Yajur, and Atharva are upheld by a reverse process of the structuring dynamics of Veda with the three aspects of the Vedic Literature called Upa-Veda, or supportive Veda (see Chapter V, Sections 4-6). The three aspects of Upa-Veda are:

- | | |
|--------------------------|--|
| 4. <i>Sthāpatya Veda</i> | a. Sthāpatya Veda, which has a predominantly Chhandas quality and is with reference to establishing everything in the light of Natural Law. |
| 5. <i>Dhanur-Veda</i> | b. Dhanur-Veda, which has a predominantly Devatā quality and is with reference to the invincible quality of consciousness. |
| 6. <i>Gandharva Veda</i> | c. Gandharva Veda, which has a predominantly Ṛishi quality and is with reference to the integrating quality of consciousness. |

Vedānga represents the body of Veda. The first aspect of Vedānga, Shikshā (see Chapter V, Section 7), is that quality which accounts for the mechanics of **expression** of Veda. From that level of expression, Ātmā gets transformed from unmanifest into manifest. This **transformation** is Kalpa (see Chapter V, Section 8). Kalpa is the fundamental value which transforms the being-level into the becoming-level. It describes how singularity brings in diversity through the self-referral quality of consciousness. From this transformation emerges the quality of progression and **expansion**. This is Vyākaraṇa (see Chapter V, Section 9).

It is important to remember that we are expressing the unmanifest field of life. So when we speak of an expression in the unmanifest, we have to have an aspect which balances or neutralizes that expression. This is in order to maintain the unmanifest quality of pure self-referral nature of Veda. In other words, unmanifest means there are no manifest expressions. Yet if we want to speak of 'expression' in the unmanifest, we have to realize that this 'expression' has an equal and opposite expression that neutralizes it. If anything is added to a system which is balanced, something else has to be also added but which is equal and in the opposite direction in order to maintain balance.

This has a direct correspondence to the description of the unmanifest vacuum state of quantum field theory in physics. The vacuum state is completely neutral; but still there are fluctuations within the vacuum state, which can give rise to the momentary emergence of positively and negatively charged particles. For example a photon, or quantum of light (which has no electric charge), can be transformed for a short time into an electron (with a negative charge) and a positron (the anti-particle of the electron with a positive charge). The total sum of the electric charges, however, is

exactly zero, so there is always a balance between positive and negative charges. If one wishes to focus on describing the emergence of negatively charged particles, one can do so, knowing that simultaneously the system is generating positively charged particles. Because it is simultaneous, it cannot be described as sequential. It all happens at the same time—this is the case of any expression coming from the absolute. Any disturbance, change, or manifestation is always simultaneously accompanied by an equal and opposite disturbance, change, or manifestation. This maintains absolute balance.

If we were to imagine a hypothetical (unreal) situation in which the emergence of the particles (negative and positive) are sequential rather than simultaneous, then we can describe the phenomenon in terms of a feedback system which tells the absolute that a negative charge has been generated and induces the creation of a positive charge as a result in order to maintain balance.

The reality is that simultaneity is always operating. It can only be this way if total balance is to be maintained at all time. Otherwise, imbalance can emerge even for an instant. The time element which seems to separate the action from the reaction—the cause from the effect—is, from an absolute perspective, only a perceptual fallacy. As we attempt to describe the system, however, we find ourselves looking to its components⁹. The intelligence which, for example, generates expressions is one of the components. It is called *Shikshā* in the Vedic Literature. The intelligence which insures that every expression is balanced and connected to its absolute source so that a balancing expression is always simultaneously generated is called *Nirukta*. In this manner emerge all the different aspects of the Vedic Literature.

To maintain connectedness with the source, the system operates in a feedback loop fashion. (See text on 'loops', Chapter II)

Therefore these three values of *Shikshā*, *Kalpa*, and *Vyākaraṇa* (expression, transformation, and expansion) are upheld by a reverse process, which keeps any step of expression, transformation, and expansion connected with the source. This maintains connectedness with *Ātmā*—self-referral consciousness. This connection of the three qualities to their source, *Ātmā*, is upheld by *Nirukta*, *Chhanda*, and *Jyotish* (see Chapter V, Sections 10–12).

10. *Nirukta*

Whatever is being expressed is being dissolved. Homeostasis is maintained within dynamic change. This returning, **self-referral** value expresses itself through *Nirukta*. In both these values, forward and backward, there is a specific balance and a measuring quality in time and space. This specific

11. *Chhanda*

measuring is *Chhanda*; and in this simultaneous co-existence of two values of awareness, there is **all-knowingness**. This all-knowingness

9. Speaking about the components of the absolute is only a conceptual intellectual exercise. The reality of the absolute remains oneness, singularity, unity.

12. *Jyotish*

in opposite directions is Jyotish. Chhanda acts as the transforming value on the way back to pure wakefulness. In this way, we see how the structuring dynamics of pure knowledge is in opposite qualities. This is a loop. It is only through a loop that the structuring dynamics can be fully and completely expressed.

The next aspect of the Vedic Literature, called Upānga, operates in the same way by means of a loop—going and coming back to the source. It consists of Nyāya, Vaisheshika, Sāṃkhya, Yoga, Karma Mīmāṃsā, and Vedānta. The first value of

13. *Nyāya*

Upānga, Nyāya, represents that value which allows to see going and coming back at the same time, **distinguishing and deciding**, and co-existence of opposite values¹⁰ (see Chapter V, Section 13).

14. *Vaisheshika*

Vaisheshika deals with **specific** aspects of infinity—points as specific values of infinity and their specific sequence (see Chapter V, Section 14). What are these points and their sequence? This is counted in terms of

15. *Sāṃkhya*

25 values described in Sāṃkhya, which represents the **enumerating** quality of consciousness (see Chapter V, Section 15).

However, this is not in the classical sense. We are describing the unmanifest field of life. So, when we are describing points, i.e., expressions (Shikshā), in the unmanifest, we have to be aware that these points are there in the state of unity; and therefore, as a complete contrast to the consideration from the value of the points, we have that

16. *Yoga*

unity, oneness, singularity. This **unifying** value is handled by Yoga (see Chapter V, Section 16). In Yoga, in unity value, the goal of 'know thyself' is reached: 'I know myself'. And immediately, through the process of knowing oneself, the concept of knower (Ṛishi), process of knowing (Devatā), and known (Chhandas) emerges. As a result, dynamic activity (Karma) emerges. This is

17. *Karma
Mīmāṃsā*

the field of **analysis** of action—Karma Mīmāṃsā (see Chapter V, Section 17).

18. *Vedānta*

Yoga and Karma Mīmāṃsā both together find themselves as being the total opposite qualities of Vedānta (see Chapter V, Section 18): wholeness left to itself, but fully awake—**I-ness (the Transcendent)**.

Āyur-Veda:

19. *Charaka*

20. *Sushruta*

21. *Vāgbhatt*

22. *Bhāva Prakāsha*

23. *Shārngadhara*

24. *Mādhava Nidāna*

Āyur-Veda emerges as a **balancing** quality of consciousness, which is a self-sufficient loop formed by the six Saṃhitās of Āyur-Veda: Charaka, Sushruta, Vāgbhatt, Bhāva Prakāsha, Shārngadhara, and Mādhava Nidāna. Āyur-Veda eliminates the mistake of the intellect which sees the parts of life as separate from the holistic value of life. It is the perfect science of health and total integration (see Chapter V, Sections 19-24).

10. In the unified value of consciousness, Saṃhitā, the values of Ṛishi, Devatā, and Chhandas are seen as one. Here arises a question: This or that? Shikshā, Kalpa, Vyākaraṇa, Nirukta, Chhanda, or Jyotish. What is real? Is the structure real or are the gaps real? The co-existence of opposite values is handled by Nyāya.

- 25. *Smṛiti*
- 26. *Purāṇa*
- 27. *Itihāsa*
- 28. *Brāhmaṇa*
- 29. *Āraṇyaka*
- 30. *Upanishad*

In a similar way, a fifth loop of the Vedic Literature, consisting of *Smṛiti*, *Purāṇa*, *Itihāsa*, *Brāhmaṇa*, *Āraṇyaka*, and *Upanishad* arises. It describes the *Ṛishi*, *Devatā*, and *Chhandas* qualities of self-referral consciousness within the *Samhitā* quality of self-referral consciousness looping back onto itself, with the following respective qualities: **memory; ancient, eternal; blossoming; structuring; stirring; and transcendental self-referral** (see Chapter V, Sections 25–30).

This is how *Ṛk Veda* and the whole Vedic Literature emerge within the pure Self, *Ātmā*, in its self-referral quality, expressing, transforming, expanding, silence and dynamism, sounds and the gaps between sounds; always coming back to the source via the loops at the basis of the structuring dynamics of pure knowingness.

- Prātishākhya:*
- 31. *Ṛk Veda*
 - 32. *Shukla-Yajur-Veda*
 - 33. *Kṛishṇa-Yajur-Veda (Taittirīya)*
 - 34. *Sāma Veda (Pushpa-Sūtram)*
 - 35. *Atharva Veda*
 - 36. *Atharva Veda (Chaturadhyāyī)*

Ultimately, via the six *Prātishākhya* (see Chapter V, Sections 31–36), *Ātmā* emerges as unity and diversity, wholeness and all the point values integrated together within the self-sufficient, self-referral, **omnipresent, holistic** value of totality—*Brahm. Ayam Ātmā Brahm; 'This Ātmā is Brahm'*.

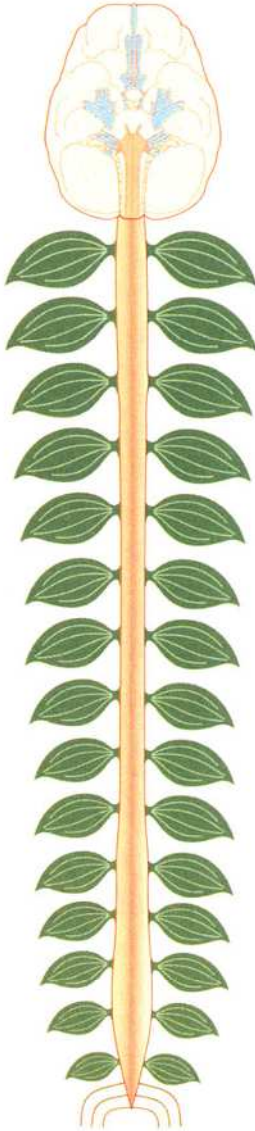
Veda and the 36 aspects of the Vedic Literature will be discussed in greater detail in Chapters IV and V. They are the subject of extensive study and research at Maharishi Vedic Universities and Maharishi Āyur-Veda Universities around the world.

CHAPTER IV

Veda in the Physiology

Veda is total knowledge—the Constitution of the Universe. It has been located in the total structure of the human physiology as a complete replica of Ṛk Veda. The syllables, verses, stanzas, and Maṇḍalas of Ṛk Veda have been mapped in the entire structure of the nervous system and in all the peripheral nerves controlling the activities of the tissues, organs, and organ systems. The basic theme of organization of Ṛk Veda has also been located within the DNA of every cell of the body.

This discovery of Veda in the physiology makes the study and knowledge of physiology a study and understanding of Veda, as mentioned in one of the aspects of the Vedic Literature, the Bhagavad-Gītā:



ऊर्ध्वमूलमधःशाखमश्वत्थं प्राहुरव्ययम् ।
छन्दांसि यस्य पर्णानि यस्तं वेद स वेदवित् ॥

*Ūrdhvamulamadhaḥ shākham ashvatthaṁ
Prāhuravyayam, Chhandāṁsi Yasya Parṇāni
Yastaṁ Veda Sa Vedavit.
(Bhagavad-Gītā 15.1)*

*‘Ṛk Veda speaks of the eternal
Ashvattha, the World Tree, whose roots
are on top and branches with leaves below.
They are the Vedic hymns.
He who knows it knows the Veda’.*

Figure 9. This is an artistic representation of the human nervous system, showing the brain at the top of the chart with some cranial nerves, resembling the root and bulb of a tree, and the spinal cord with its collection of nerve rootlets, resembling the leaves of a tree in the upside-down position. (The relative size of the trunk and the number of nerves [leaves] have been modified for clarity of illustration).

ṚK VEDA SAMHITĀ: Holistic Physiology—DNA

‘AK’

The structure of Ṛk Veda has been described in Chapters II and III. Also described was the correspondence between the first syllable of Ṛk Veda, ‘AK’, with the first step and sequential steps that lead to any sensory experience.

In this section, the details of the structures corresponding to each part of Ṛk Veda will be elaborated. We will follow, in the physiology, what takes place in the span of time when a sensory stimulus (like a sound or a flash of light) hits our peripheral receptors (like the ear or the eye), reaches our conscious awareness, is interpreted by our nervous system, and elicits a reaction in response to it. We will describe how each of these steps corresponds to the sequential flow of sounds and gaps in Ṛk Veda, as brought to light by His Holiness Maharishi Mahesh Yogi in his Apaurusheya Bhāshya (see Chapters I-III). As discussed in the previous chapters, the first step of any experience happens at the collapse of the observer’s awareness to a point value (corresponding to ‘AK’), and the collapse of a sensory stimulus (sound, sight, taste, etc.) onto the peripheral sensory receptors (corresponding to ‘ṚK’), as explained above. The following steps describe the full, holistic experience, from the stimulus to its interpretation, to the generation of a meaningful response to that interpretation, and the correspondence of these steps to the structure of Ṛk Veda. The auditory pathway will be described for the purpose of illustration.

First Ṛichā

We have seen that the first syllable of Ṛk Veda, ‘AK’, gets elaborated in the first Pāda (phrase of eight syllables with Ṛishi quality). The human brain’s perception of sound is also transmitted from the periphery to the cortex through eight steps separated by synaptic gaps. This brings the sound to the conscious awareness. It has a quality of Ṛishi. Following the first level of perception of the sound, there are eight steps which interpret, metabolize, or transform the sound, giving it intellectual and emotional characteristics. This is the Devatā value and corresponds to the second Pāda. These steps act as motivational drives leading to a third level of elaboration through eight steps which generate a meaningful response to the sound. This third level hides the sound value by the reaction to it. It has a Chhandas quality and corresponds to the third Pāda. Together these 24 steps constitute one full elaboration of the sound.

Each of these 24 neurophysiologic-neuroanatomic steps ends in a gap from which the next step emerges. These steps correspond to the 24 syllables of the first Ṛichā of Ṛk Veda in the following way.

Ṛishi

First Pāda

The perception, or acknowledgement of the sound happens through the following eight steps corresponding to the first Pāda of the first

RK VEDA : Holistic Functioning of the Physiology

First Richā of Rk Veda
First Pāda: Eight Syllables with Rishi Quality

अक् नि मी ङे पु रो हि तं

First Pāda

य ज्ञ स्य दे वं ऋ त्वि जम्

Second Pāda

हो ता रं र त्त धा तं अम्

Third Pāda

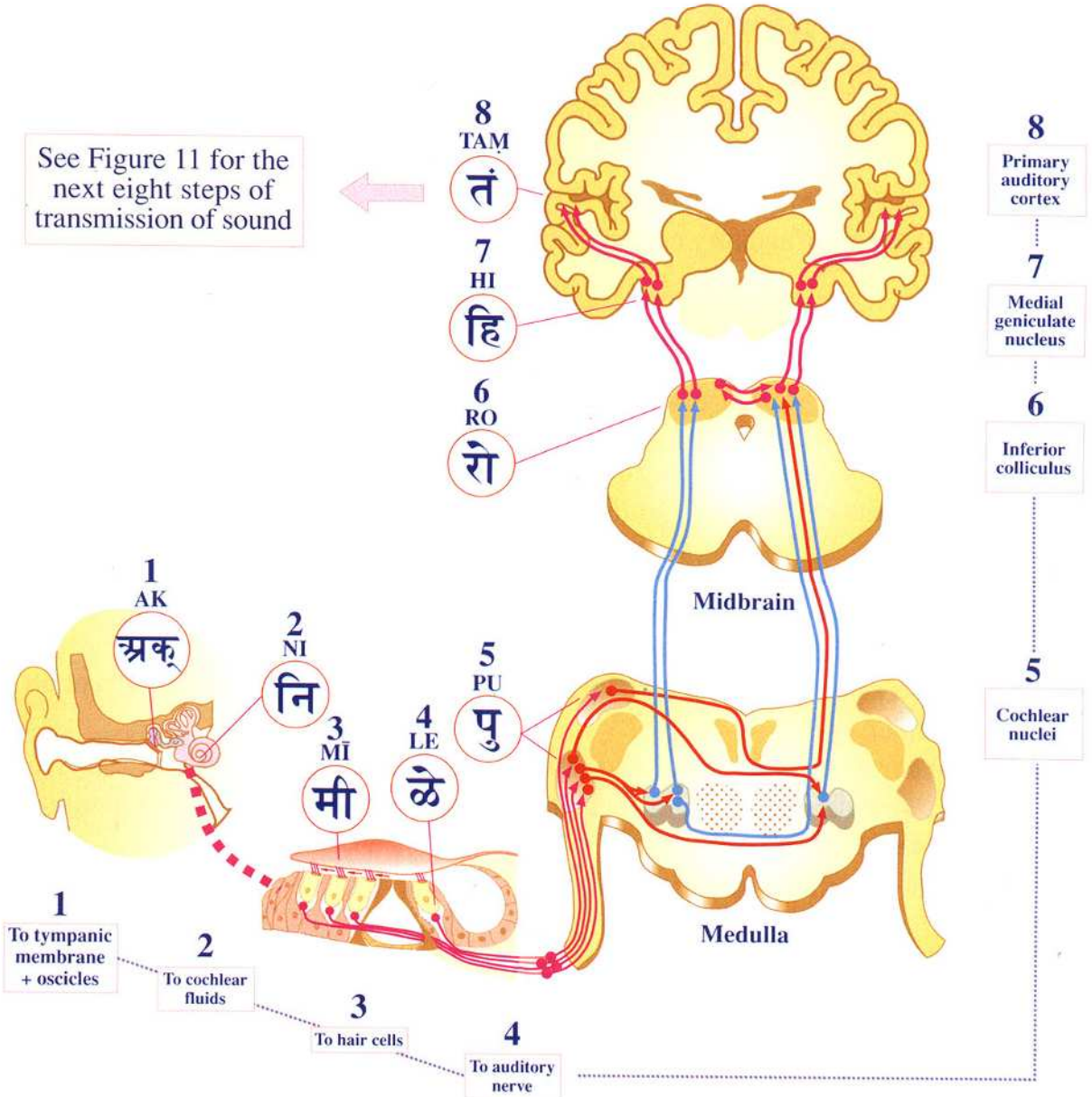


Figure 10 Shows the eight steps of transmission of a sound from the ear to the auditory cortex. They correspond to the eight syllables of the first Pāda of Rik Veda, shown in Sanskrit inside the circles.

Ṛichā, or the Ṛishi value (see Figure 10):

1. AK: the sound which was reverberating in the open air reaches the outer ear where it is funnelled down and collapses to a condensed point value in the tympanum and ossicles of the middle ear.
2. NI: the inner ear fluid vibrates in waves that collapse on the neuronal hair cells.
3. MĪ: the hair cells generate an electromagnetic impulse which reaches a synaptic gap.
4. LE: the sensors of the bipolar auditory nerve cells pick up the impulse from the gap and carry it through to another gap junction in the inner brain structures.

The central auditory pathways extend from the cochlear nucleus to the primary auditory cortex by means of four distinct stations, each separated by a synaptic gap:

5. PU: the cochlear nucleus.
6. RO: the inferior colliculus.
7. HI: the medial geniculate nucleus.
8. TAM: the primary auditory cortex.

The sound has now reached the brain and has been acknowledged.

Devatā

Second Pāda

The processing and interpretation of the sound follow eight steps, separated by gaps, which correspond to the second Pāda of Ṛk Veda with Devatā quality (see Figure 11):

1. YA: from the primary auditory cortex, the impulse is transmitted to the association cortex that integrates auditory (as well as visual and somatic) sensation into a more complex level of perception.
2. GYA: Wernicke's area and its homologous area process the complex perception into meaning.
3. SYA: the frontal cortex carries the meaning to its highest abstract level.
4. DE: the cingulate gyrus, the first part of the limbic system involved in motivation, drive, and emotion.
5. VAM: the entorhinal cortex.
6. ṚI: the hippocampal formation, temporal lobe area.
7. TVI: the amygdaloid complex.
8. JAM: the hypothalamus.

Chhandas

Third Pāda

The third and final Pāda, also of eight distinct steps separated by gaps, produces the response to the sound. It therefore terminates the whole experience of the sound by covering it with a specific, meaningful, and adaptive behavioural, physiological, and neuro-endocrine response. This is the Chhandas value (see Figure 12).

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First Richā of Rk Veda
Second Pāda: Eight Syllables with Devatā Quality

अक् नि मी ळे पु रो हि तं

First Pāda

य इ स्य दे वं ऋ त्वि जम्

Second Pāda

हो ता रं र त्त धा तं अम्

Third Pāda

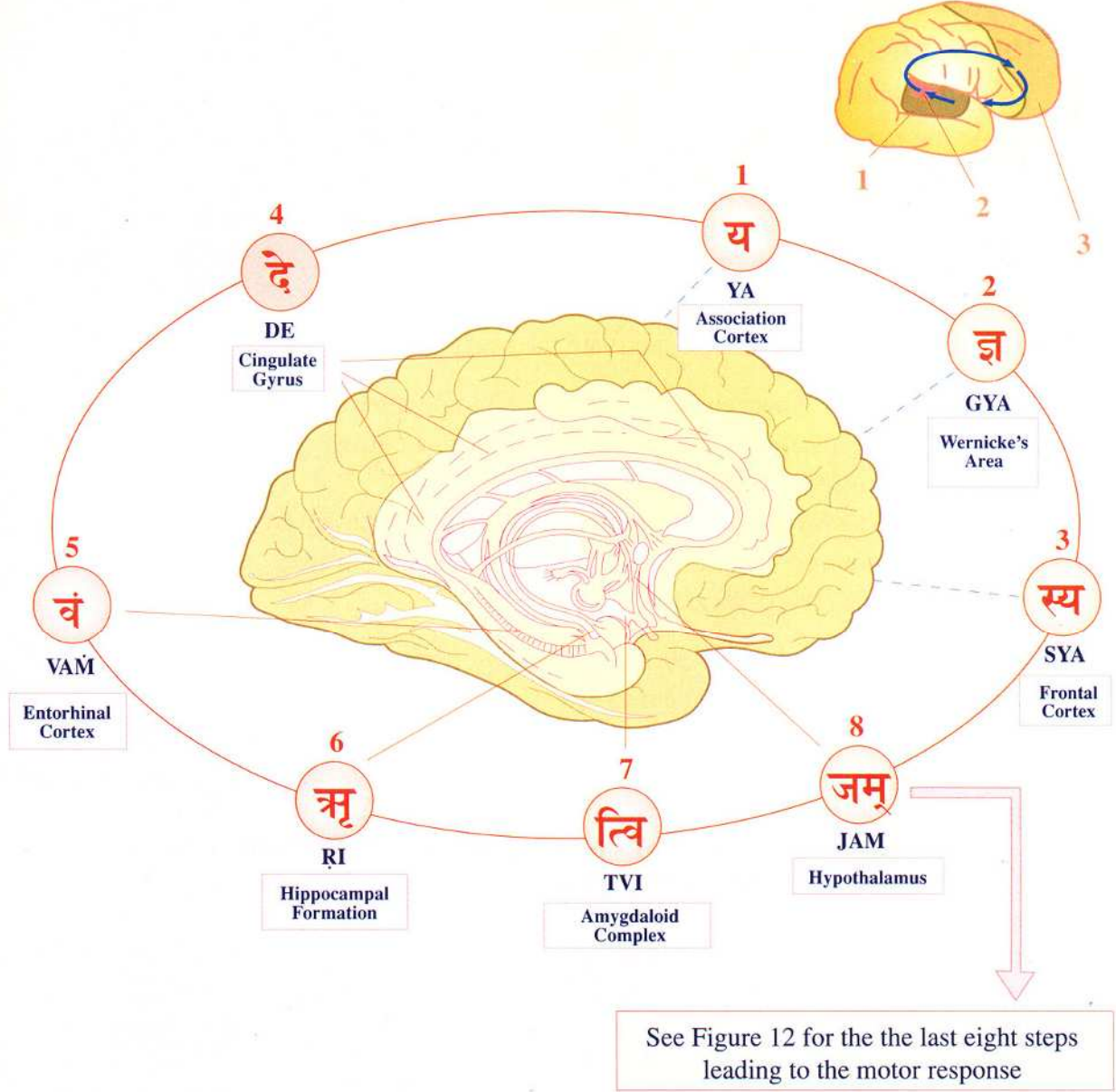


Figure 11 shows the eight steps of processing the auditory input from the association cortex to the hypothalamus. They correspond to the eight syllables of the second Pāda of Rk Veda, shown in Sanskrit inside the circles.

1. HO: the frontal cortex now gets the proper motivational drive from the resultant of the condensed and specific metabolism of the experience completed by Devatā. It calls upon the next two sequential steps to preside over the response (speech and/or action).
2. TĀ: the motor cortex is primed to carry the plan of action.
3. RAM: the somato-sensory and supplementary motor cortex will identify the target, initiate the speech or action, and give the final instructions to the next two steps to prepare, calculate, balance, and be alert to continuously monitor the response.
4. RA: the basal ganglia and cerebellum.
5. TNA: the thalamus.
6. DHĀ: the pre-motor areas release the finished plan of speech or action, allowing it to be expressed or performed.
7. TAM: the motor cortex; the upper motor neurons send the final and fully analyzed impulse down to the local motor neurons to perform the action. It 'shoots the arrow' down the brain stem and spinal cord.
8. AM: the lower motor neurons activate the muscles to perform the action*.

*The Structure
and Dynamics
of the Gaps in
Ṛk Veda and in
the Physiology*

The emergence of each syllable, one after another, in Ṛk Veda happens through the gaps between two consecutive syllables. In this, there is a process of collapse of the first syllable (Pradhvaṁ-sābhāva) into a point value (Atyantābhāva) from which is elaborated the process (Anyonyābhāva) which leads to the emergence of the next syllable (Prāgabhāva).

These four aspects of the gap correspond to the synapse between two consecutive steps of signal transmission in the nervous system in the following way:

* It is interesting to note that these 24 steps are grouped in distinct sub-groupings which correspond to a division of the first Ṛichā into words:

AKNI:carries the sound waves in a mechanical way outside the peripheral nervous system.

MĪLE:carries the impulse in the peripheral nervous system outside the central nervous system.

PUROHITAM:carries the impulse inside the nervous system up to the cortex.

YAGYASYA:processes the sound in the higher neo-cortical structures with respect to its abstract meanings.

DEVAM:processes the sound in neo-cortical structures with respect to its deeper emotional meanings.

ṚITVIJAM:processes the final metabolism of the sound with respect to its final, condensed, overall significance, and its implication for action.

HOTĀRAM:plans, presides over, and ordains the performance of action. It is seated in the neo-cortical parietal pre- and post-central gyri.

RATNA:the diencephalic structures and cerebellum regulate the smoothness and appropriateness of movement, planning, and execution of complex motor strategies; compare intention with performance; and compensate for errors.

DHĀTAMAM:the motor neurons and muscle carry out the order of action.

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First Richā of Rk Veda

Third Pāda: Eight Syllables with Chhandas Quality

अक् नि मी ळे पु रो हि तं	य ज्ञ स्य द वं ऋ त्वि जम्	हो ता रं र ल्ना धा तं अम्
First Pāda	Second Pāda	Third Pāda

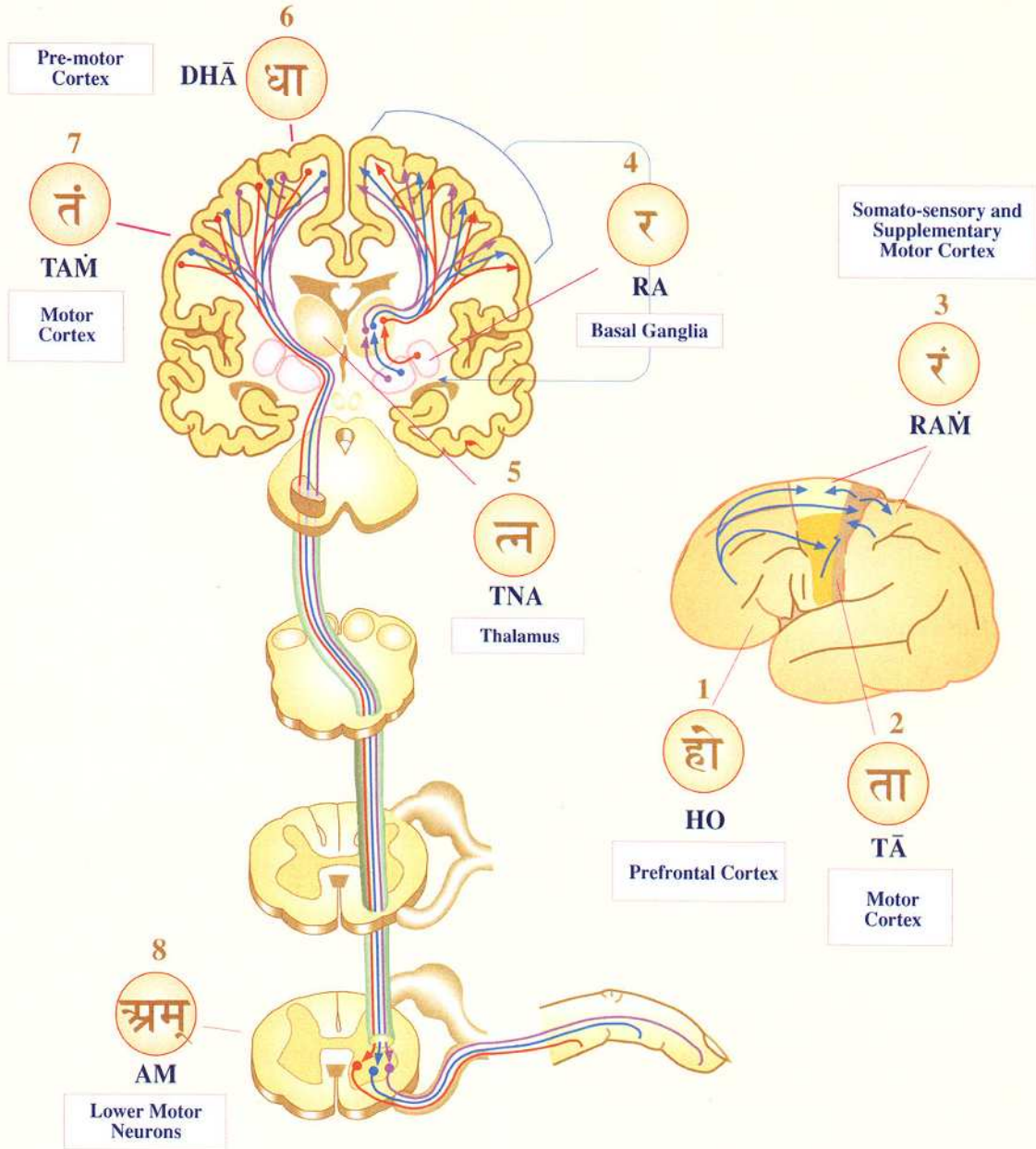


Figure 12 shows the eight steps that lead to the motor (or possibly verbal) response to the processed sound. They correspond to the eight syllables of the third Pāda of Rk Veda, shown in Sanskrit inside the circles.

Pradhvaṁsābhāva
Atyantābhāva
Anyonyābhāva
Prāgabdhāva

Pradhvaṁsābhāva corresponds to the pre-synaptic gap junction, which structures the collapse of the signal into the gap junction (Atyantābhāva). Eight values are involved in this process (as explained below). Anyonyābhāva elaborates the process of the activity occurring in the gap, and leads to the emergence of the post-synaptic signal (Prāgabdhāva), which corresponds to the emergence of the new syllable (see Figure 13).

At each of the individual gaps between cells, there are eight factors that determine the accuracy and completeness of the transmission through the gap. These factors apply to the pre-synaptic, synaptic, and post-synaptic processes, and therefore explain why every one of the steps leading to the collapse, interpretation, elaboration, or emergence of a syllable happens in eight elaborations.

Eight Prakṛitis

For the neurophysiological information, or signal, to proceed in a precise and orderly way, the integrity of the eight factors of the gap is crucial. Otherwise, the message could be distorted and result in an inappropriate and partial experience of the sound. This would prevent proper metabolism of the sound; proper metabolism of the sound should ultimately lead, in every case, to the experience of bliss.

The quality and wholeness of these eight factors within the gap determine the quality and wholeness of the emerging step, or syllable, on the other side of the gap. Together, the eight form an elaboration of that particular gap. These eight are:

1. Ahaṁkāra

1. The status of the gap as a whole in terms of its general structure, feedback loops activating or deactivating it, or readiness to respond. This corresponds to the Self of the gap—the ego quality. This is the Ahaṁkāra value.

2. Buddhi

2. The ability of the gap to differentiate between various possible inputs of neurotransmitters and allow their sorting out and appropriate discrimination between their qualities. This depends on the unobstructed, open, and clear channels and receptors on both sides of the gap junction. This discriminating quality corresponds to the intellect of the gap. This is the Buddhi value.

3. Manas

3. The ability of the gap to allow the passage of electrochemical signals and neurotransmitters without disturbing their integrity and structure. This depends on the enzymes and other neurotransmitters present in the gap junction. This is like the mind of the gap in which proper thoughts (neurotransmitters) are given unobstructed access without interference from other neurotransmitters (thoughts) or disruption by inappropriate thoughts (over-active or inappropriate enzymes). This is the Manas value.

4. Ākāsha

4. The space of the gap is crucial for neurotransmission. Exact distance and unobstructed space between the pre- and post-synaptic

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The Synaptic Gap

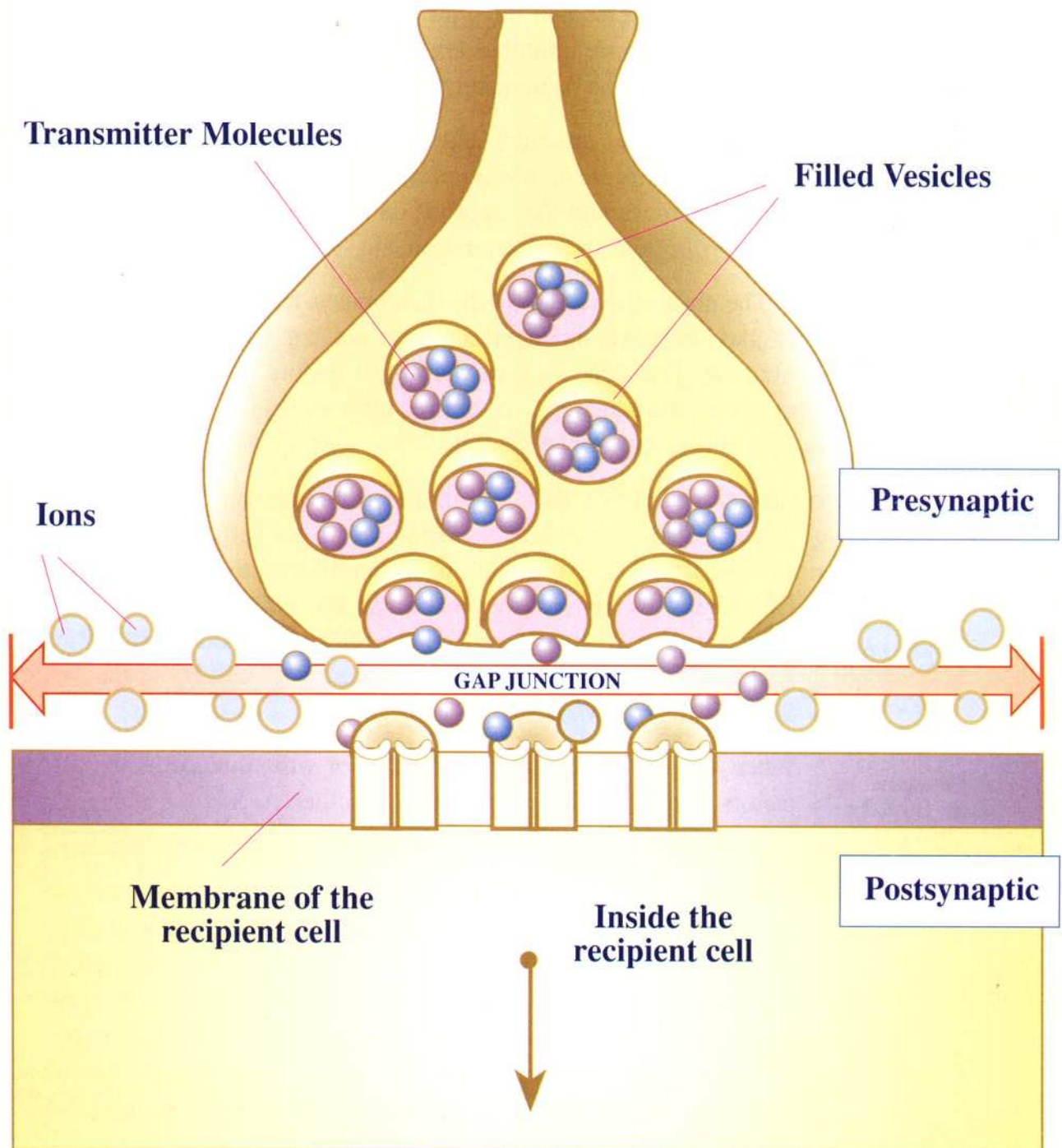


Figure 13 shows the structure of a synaptic gap and its various components corresponding to the structure of the gap between syllables in Veda and the Vedic Literature. Details are described in the text.

membranes is essential for proper relay of the message across the gap junction. The open space within the receptor channels is also crucial. This is the Ākāsha value.

5. *Vāyu*

5. The medium of transmission within the gap space is also crucial. This depends on the proper exchange of gases (O₂, CO₂, etc.), which maintain the livelihood of the gap junction. This is the Vāyu quality.

6. *Agni*

6. The excitability of the gap junction and its ability to transmit electrical impulses and integrate them properly. This depends on feedback loops, forward and recurrent inhibitions, short- and long-term potentiation, number of receptors, etc. This is the Agni quality.

7. *Jala*

7. The chemical structure and integrity of the fluids and membranes in which are bathed all of the components of the gap including the pre- and post-synaptic fluids. This depends on a variety of factors including the osmolarity, ionic constitution, and concentration, etc. This is the Jala quality.

8. *Prithivī*

8. The physical structure of the membranes, receptors, vesicles, and all gap junction components and their number, position, and mutual relations are also crucial. This depends on a variety of factors related to previous activity, long-term potentiation, integrity of the membranes, and the protein structure of receptors, etc. This is the Prithivī quality.

The eight factors mentioned above, their variation and interaction, determine how the transmission occurs. Therefore, the understanding of what actually happens in the gap can be obtained from the explanation or elaboration of these eight factors

*Emergence of
the 192 Syllables
of Richās 2–9
of the First Sūkta*

(see Figure 8). In this way, each gap has eight elaborations. As there are 24 gaps, there are $8 \times 24 = 192$ elaborations of the first Richā. These constitute the 192 syllables of Richās 2-9 of the first Sūkta of the first Maṇḍala of Rk Veda.

*Emergence of
the 192 Sūktas
of the First
Maṇḍala*

When we look at the actual dynamics of what modulates the 192 factors mentioned above, we find two factors.

The first factor is based on the structure and function of the **DNA** molecule, which is ultimately the storehouse of all information and the determinant of the physical structure of the body, as well as all thought, perception, and action. Within the **DNA** are contained all the rhythms, cycles, and laws of Nature that structure our physiology. If we want to understand what is happening in the synaptic structures between neurons, and how any of their constituents are modified, we can look at the activity and the structure of the **DNA** molecule.

*At the
DNA Level*

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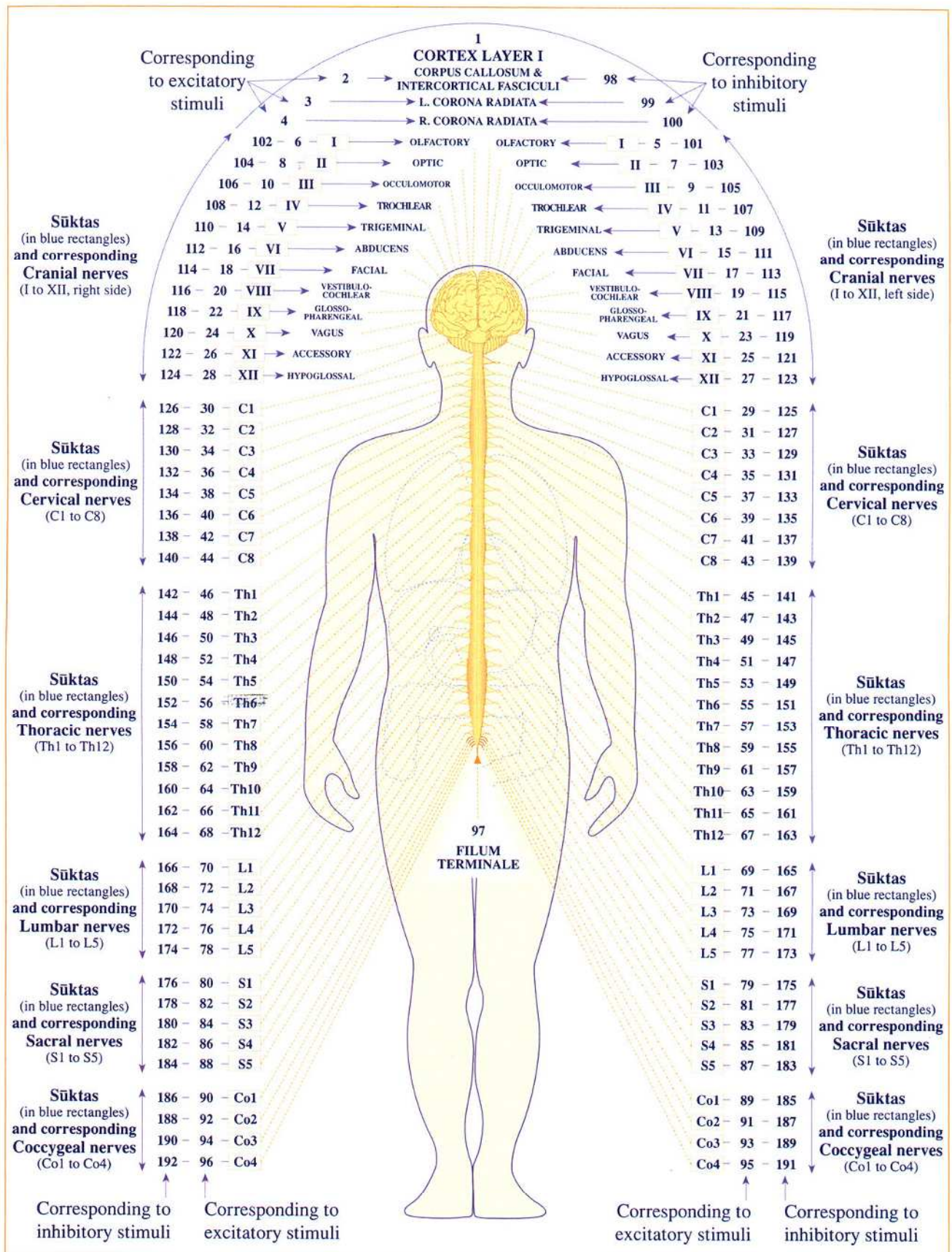


Figure 14 shows a sketch of the human body, with the nervous system and some of the organs. The cranial and spinal nerves are identified here as they correlate with the Suktas of the first Mandala of Rk Veda.

At the
DNA Level



At the
Expressed
Anatomical
Level

The basic unit of the **DNA** is a codon. There are 64 possible codons (permutations of four nucleotides into units of three), which adds up to $64 \times 3 = 192$ individual units. This could be seen to correspond to the 192 Sūktas of the first Maṇḍala of Ṛk Veda. Therefore, when we look at the finest aspect of what determines the structure and function of the physiology, we find the theme of 192 emerging on a real structuring level.

The second factor, which determines the structure and function of the synaptic gaps, involves all outer influences such as the quality of the air we breathe, the diet we eat, etc. This aspect operates on a moment to moment basis and has a reciprocal relationship of influence and control on and by the DNA*. This factor corresponds to every action and every perception: quality of thought, behaviour, diet, breathing, environment, etc. These determinants modulate the human physiology and transform the function and structure of the gaps and their corresponding factors and modulators. For example, the neurons, cells, and the whole physiology are obviously affected by eating healthy versus poisonous food, breathing good versus polluted air, following a proper daily routine versus following an improper one, and listening to soothing versus disruptive speech and music. All of these factors happen via the organs of perception and action.



Figure 15

These elaborations therefore happen by means of the structures in the nervous system that carry perception and action. These structures are also found to correspond to the 192 Sūktas in the following way.

The First Sūkta
of Ṛk Veda

The full elaboration of action and perception resides in the higher cortical layers of the central nervous system. This corresponds to the first Sūkta of Ṛk Veda (see Figure 16). According to Maharishi's Apaurusheya Bhāshya, the first Sūkta, or full elaboration, has a complementary Sūkta, which is an

Avyakta Sūkta,
the 97th Sūkta
of Ṛk Veda

unmanifest, unexpressed, or silent, Sūkta. Opposite to the higher cortical layers, at the bottom level of the central nervous system, in the tip of the spinal cord, is the filum terminale. It is a silent fibre with no activity or expression. It can be seen as the complement of the fully elaborated level of conscious expression in the cortex. These two structures therefore

192 Sūktas of the
First Maṇḍala

correspond to the first and the 97th Sūktas of the first Maṇḍala, which has 192 Sūktas (see Figures 14 and 18).

There are a maximum of 35 segments in the human spinal cord, each with a pair of

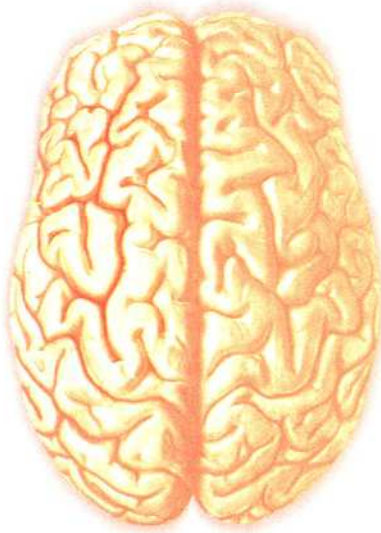
* It is now known that phenotypic changes or outer effects can even transform the DNA, leading to structural or functional improvement or deterioration. These are the influences which are stored in the DNA as 'impressions of past Karma.' When the structure and function of DNA is perfect, both physiology and behaviour display perfect balance in accordance with the laws of Nature.

ṚK VEDA

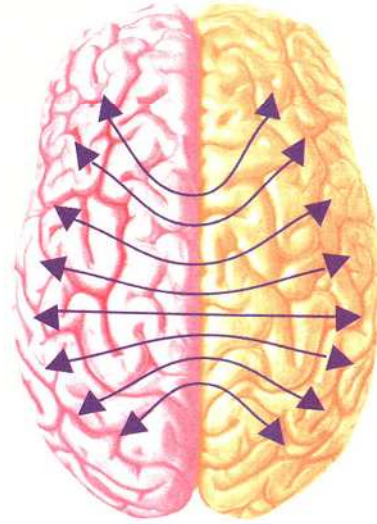
Holistic Functioning of the Physiology

Sūktas 1 to 4 and 98 to 100

Sūкта 1
CORTEX LAYER ONE

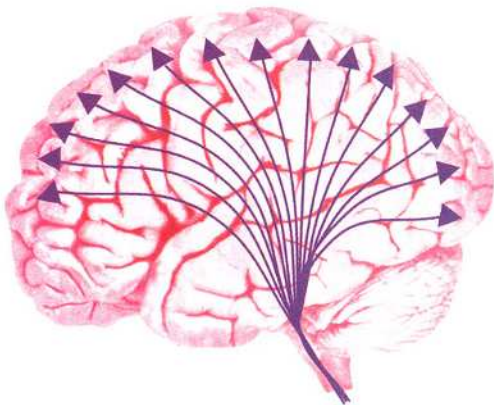


Sūktas 2 and 98
CORPUS CALLOSUM AND INTER-CORTICAL FASCICULI



Sūktas 3 and 99
LEFT CORONA RADIATA

Left Hemisphere



Sūktas 4 and 100
RIGHT CORONA RADIATA

Right Hemisphere

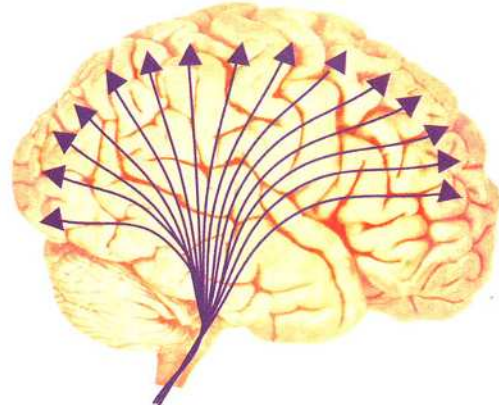


Figure 16. This shows a schematic rendering of Sūktas 1 to 4 of the first Maṇḍala of Ṛk Veda in the physiology. Sūкта 1 is located in the grey matter of the cortex, in layer one. Sūktas 2, 3, and 4 correspond to the excitatory stimuli occurring in the corpus callosum and the left and right corona radiata respectively. Sūktas 98, 99, and 100 correspond to the inhibitory stimuli occurring in the corpus callosum and the left and right corona radiata respectively.

nerves, except for the last segment which is held by the silent, fibrotic filum terminale mentioned above. This adds up to a total of $2 \times 34 = 68$ spinal nerves. There are also 24 cranial nerves. Inside the brain, there is a pair of radiations of nerve fibres to and from the cortex called corona radiata, and a conglomerate of fibres weaving the whole cortex called association and commissural fibres. Together they form a set of $68 + 24 + 2 + 1 = 95$ groupings of neuronal fibres, or extensions outside the central nervous system and into the brain.

Complementarity of Inhibitory and Excitatory Aspects

Every one of these groups of fibres carries two complementary aspects that are necessary for experience: inhibitory and excitatory messages. For example, in order to get visual information, it is necessary for certain neurons to be inhibited and others to be excited. In order to move an arm, some muscles will be activated (agonists) and some inhibited (antagonists). This allows for the differentiation and balance that are necessary for every sensory and motor experience.

This complementarity creates $2 \times 95 = 190$ specific messages that exist in complementary pairs. When the first, full cortical elaboration and its complement, the unmanifest, non-expressed elaboration, are added, the total is 192, which corresponds to the 192 Sūktas of the first Maṇḍala.

Gradual Decrease of Fullness from Sūkta 1 to Sūkta 97

As the information travels from the brain down along the spinal cord to reach the lowest segments, the higher segments will 'see' much more information pass through them than the lower segments. For example, an order from the brain to move the body and catch a ball is carried down through the spinal cord. Fibres on the way are activated or deactivated and the messages are sequentially delivered to the different segments. It is like a postman leaving the post office with a bag full of letters and distributing them to the different addresses along the street. On the way, his bag becomes less and less full until, at the end of the journey, it becomes empty.

This is similar to the description of the gradual decrease in the fullness of the Sūktas as they proceed from Sūkta 1 to Sūkta 97 (see Figures 14 and 16–18).

The Sūktas of the first Maṇḍala have been found to correspond to groups of fibres projecting into the cortex (first Sūkta), inside the brain (association fibres and corona radiata), and outside the central nervous system (cranial and spinal nerves).

Emergence of the 192 Sūktas of the Tenth Maṇḍala

The structures of the central nervous system that uphold these fibres lie in the synaptic gaps between them. This is where the information arising in the neuronal fibres is elaborated. This gives us 192 components, also carrying the same type of complementarity of excitatory and inhibitory action. They correspond to the 192 Sūktas of the tenth Maṇḍala (see Figure 20).

In other words, every one of the cranial and spinal nerves is separated from the other

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Sūkta 5 to 28 and 101 to 124

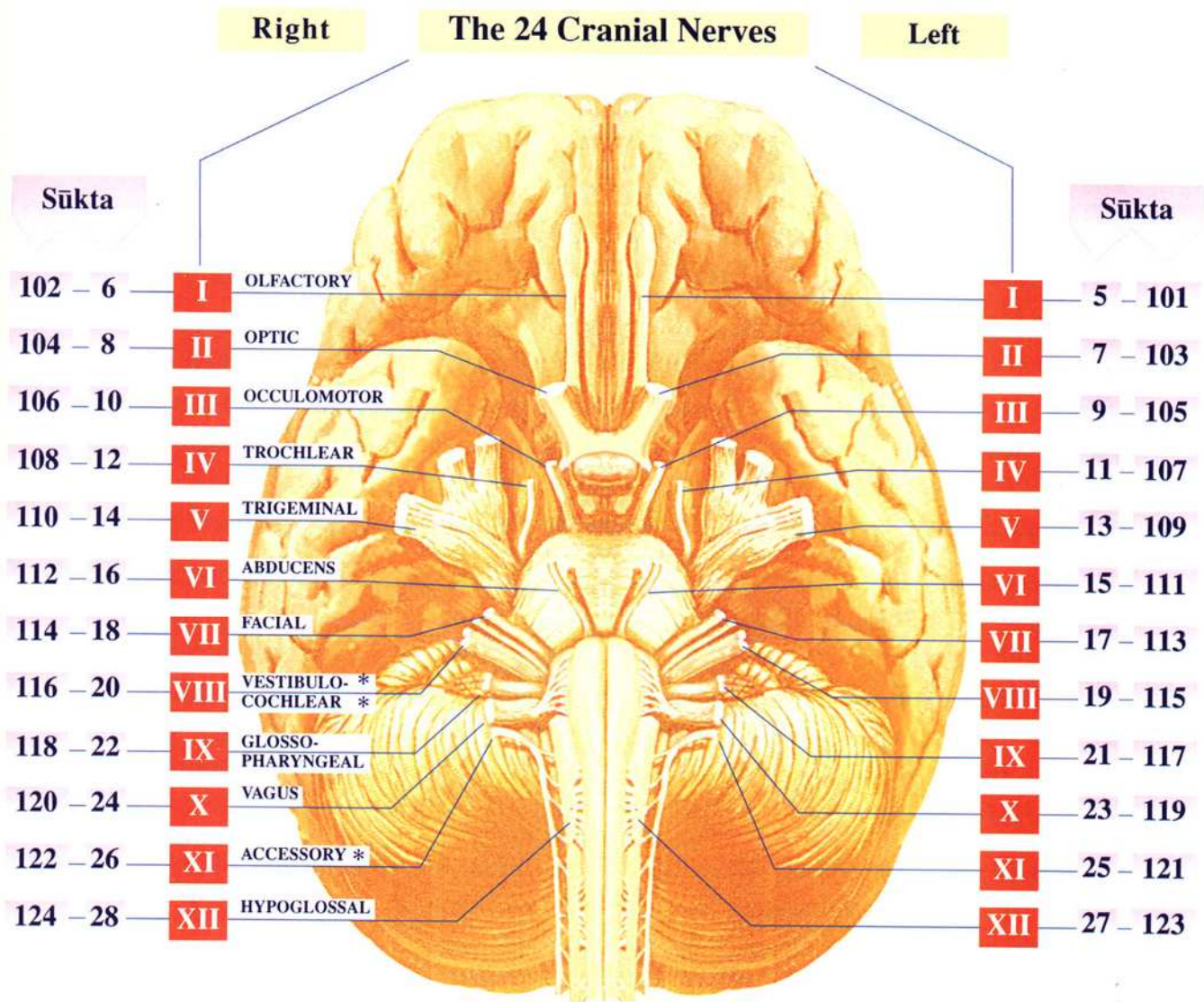


Figure 17 shows Sūktas 5 to 28 and 101 to 124 of the first Maṇḍala of Rk Veda in the physiology. Sūktas 5 to 28 correspond to the excitatory stimuli occurring in the 24 cranial nerves and Sūktas 101 to 124 correspond to the inhibitory stimuli occurring in the same cranial nerves. The roman numerals refer to the cranial nerves on both sides of the brain.

* The vestibular and cochlear nerves have two separate origins, tracts, and terminations in the brain stem, and therefore, should be considered as separate nerves. The accessory nerve, on the other hand, has two sections, one joining the vagus nerve and the other joining spinal nerves. It is, therefore, not a proper cranial nerve. For simplicity however, the usual nomenclature has been maintained.

by a gap from which there are no nerves emerging. This is where the final activity is elaborated that relates to the two adjacent nerves, separated by that gap. In this way the segments elaborate what is seen in the nerves and the nerves elaborate what is seen in the segments. This makes the structure deeply interconnected and unified. Every one of these nerves (Sūktas) is formed by a number of rootlets. The rootlets correspond to the Ṛichās of a Sūkta (see Figure 19).

Maṇḍalas 2 to 9

Eight Basic Elements

All the basic elements that constitute the physiology, the cell, and their function are elaborated in the same manner. They are: earth (solidity, structure), water (fluids, ionic constituents), fire (chemical reactions, enzymatic activity, excitability, digestion), air (gaseous exchange, O₂, CO₂, breathing), space (where everything happens, all channels), mind, intellect, and ego. They emerge sequentially from the gaps following the Ṛichās of the first Sūkta.

The reasons for the emergence of Maṇḍalas 2 to 9 at these particular points can also be understood by looking at the syllables of the first Ṛichā in the following way:

2nd Maṇḍala Prithivī

We find the first Ṛichā of the first Sūkta of the first Maṇḍala to be a complete elaboration of the heard sound, and its termination into action. This action is the consolidation of the experience into a new situation which has a manifest, gross character. This manifest gross character is expressed by the value of Prithivī (earth, solidity). This is why the second Maṇḍala, which according to Maharishi's Apaurusheya Bhāshya represents Prithivī value, emerges here.

3rd Maṇḍala Jala

The third Maṇḍala emerges at the gap between the second and the third Ṛichās, just after the gap between 'NI' and 'MĪ' has been elaborated. In the central nervous system, 'NI' corresponds to the cochlear fluids (fluid-filled membranes which transport the sound through waves). This explains why the third Maṇḍala is related to the Jala (water) element, which represents all the fluids in the physiology that are essential for any physiological activity and for the life of every cell.

4th Maṇḍala Agni

The fourth Maṇḍala emerges after the first stream of excitable structures (neurons) have carried the sound (see 'MĪ', 'LE', 'PU', and 'RO' above). This represents the Agni (fire) element.

5th Maṇḍala Vāyu

The fifth Maṇḍala emerges after 'RO', 'HI', and 'TAM', and corresponds, in the nervous system, to the anatomical and functional loci where the sound is differentiated in terms of its vibrational qualities. At this level, it is recognized as a sound with specific vibrational characteristics, but not yet fully analyzed. This is why the fifth Maṇḍala, which is related to the Vāyu (air) element where vibrations are transmitted, emerges here.

6th Maṇḍala Ākāsha

The sixth Maṇḍala emerges after 'YA', 'GYA', and 'SYA', and corresponds, in the nervous system, to the anatomical and func-

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Sūktas 29 to 97 and 125 to 192

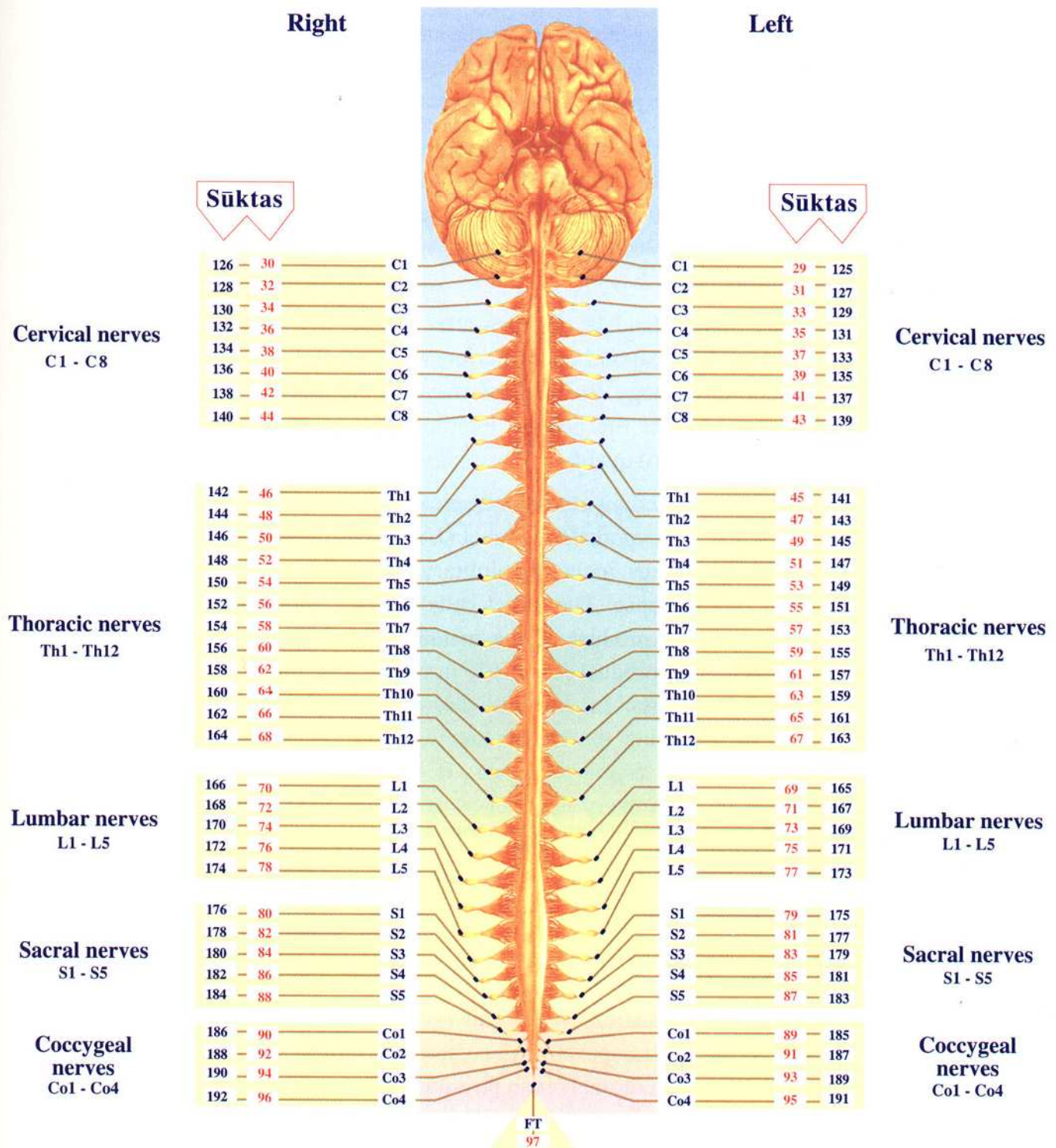


Figure 18 shows Sūktas 29 to 97 and 125 to 192 of the first Maṇḍala of R̥k Veda in the physiology. Sūktas 29 to 96 correspond to the excitatory stimuli occurring in the spinal nerves. Sūktas 125 to 192 correspond to the inhibitory stimuli occurring in the same nerves. Sūkta 97 corresponds to the silent filum terminale.

tional loci where the sound starts to be interpreted in terms of its location in space, its speed of motion (if it is a moving sound, e.g., a car passing), and its more abstract meaning. This is why the sixth Maṇḍala, which corresponds to the Ākāsha (space) element, emerges at this level.

*7th Maṇḍala
Manas*

The seventh Maṇḍala emerges after 'DE', 'VAM', and 'RI', and corresponds to the levels in the nervous system where the sound has already acquired a meaning and is now floating as a thought that is finding its full meaning with respect to the person. This corresponds to the Manas (mind) quality.

*8th Maṇḍala
Buddhi*

The eighth Maṇḍala emerges after 'TVI', 'JAM', and 'HO', and corresponds to the levels in the nervous system where the sound has been analyzed and given a full emotional and intellectual meaning. Discriminative faculties have been exercised. This corresponds to the Buddhi (intellect) quality.

*9th Maṇḍala
Ahaṁkāra*

The ninth Maṇḍala emerges after 'TĀ', 'RAM', and 'RA'. The neuro-chemical and neuro-hormonal modulators, which adjust and set the whole psycho-physiology to integrate the comprehensive response to the sound, emerge at this level of the holistic interpretation of the sound. This corresponds to the Ahaṁkāra (ego) quality.

*Soma—
End Product
of the Perfect
Metabolism
of Experience*

A sophisticated internal biochemical and autonomic response is initiated at the hypothalamic level (JAM), but finds its full expression after three steps, including pituitary activation and pituitary and target cell response. The target cells produce what can be seen as a fine internal product of the metabolism of the sound. When the metabolism is complete, this product is holistic in nature and allows or contributes to the experience of pure bliss. In the ninth Maṇḍala, it is called Soma, and it emerges in four steps following the hypothalamic activation, just at the level of emergence of the ninth, or Soma Maṇḍala. If the physiology is functioning properly, Soma emerges from every experience; it creates bliss, hides everything, and gives out Puruṣha after the experience of finest activity. There is the end of the notion of Prakṛiti. Pure wakefulness in the tenth Maṇḍala emerges as the totality: Purushottama**.

This structure corresponds to the Apaurusheya Bhāshya of Ṛk Veda of His Holiness Maharishi Mahesh Yogi. It shows that the human central nervous system is built on the basis of the blueprint of creation, Veda. This is further substantiated through the study and research in the other aspects of the Vedic Literature, and their similarity with the structure and function of the human physiology.

* Purusha is the value of wholeness—pure unbounded wholeness. It is the finest experience at the level of consciousness. Having gone through the elaboration of all eight values of Prakṛiti in Maṇḍalas 2-9, we come to Maṇḍala 10, representing that wholeness which is more than the sum of its parts. Holistic experience transcends the notion of parts that have been elaborated in the eight Prakṛitis.

** Purushottama is the ultimate pure totality—all inclusive wholeness.

ṚK VEDA: Holistic Functioning of the Physiology

The Sūktas of Ṛk Veda and their Ṛichās

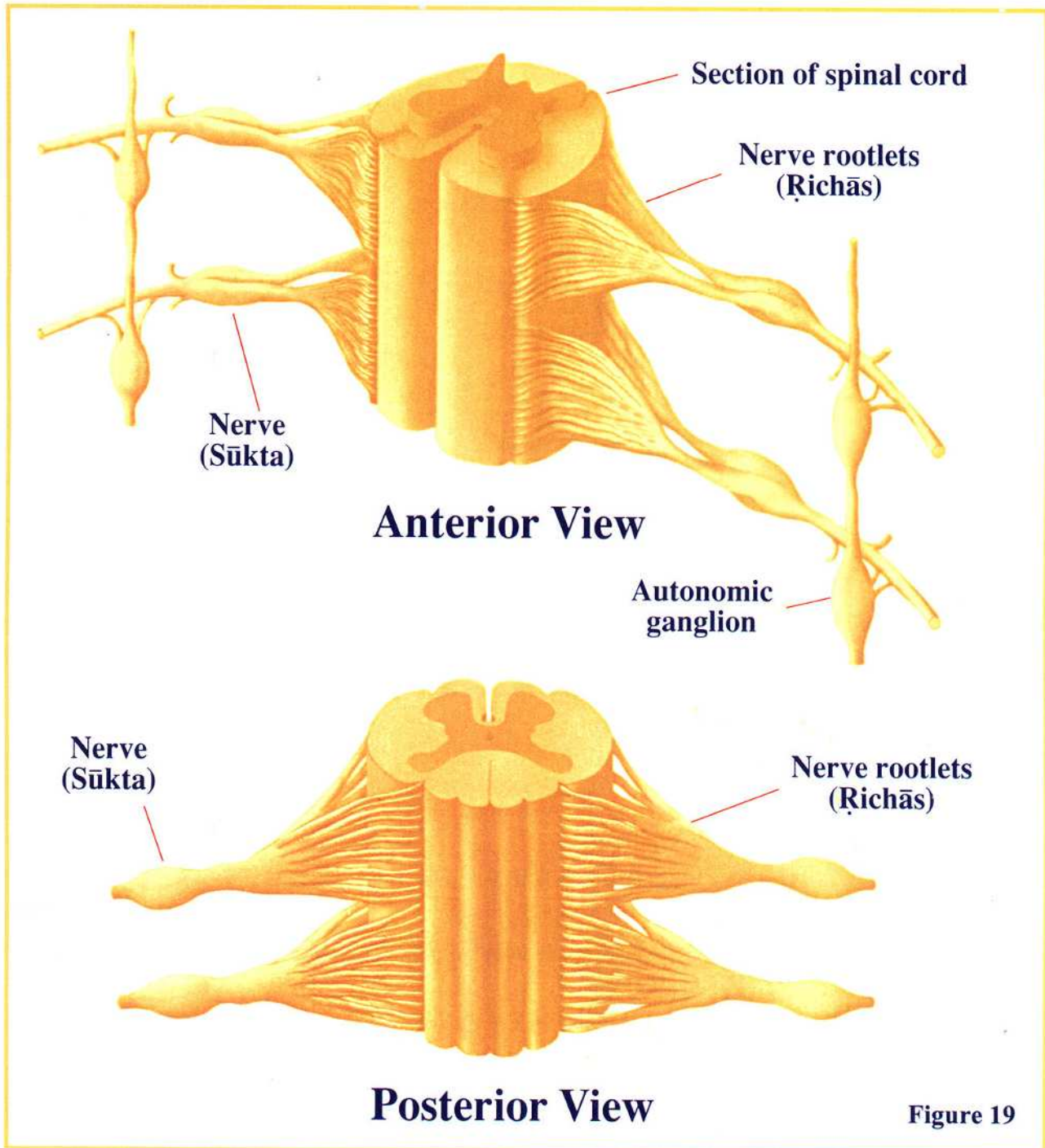
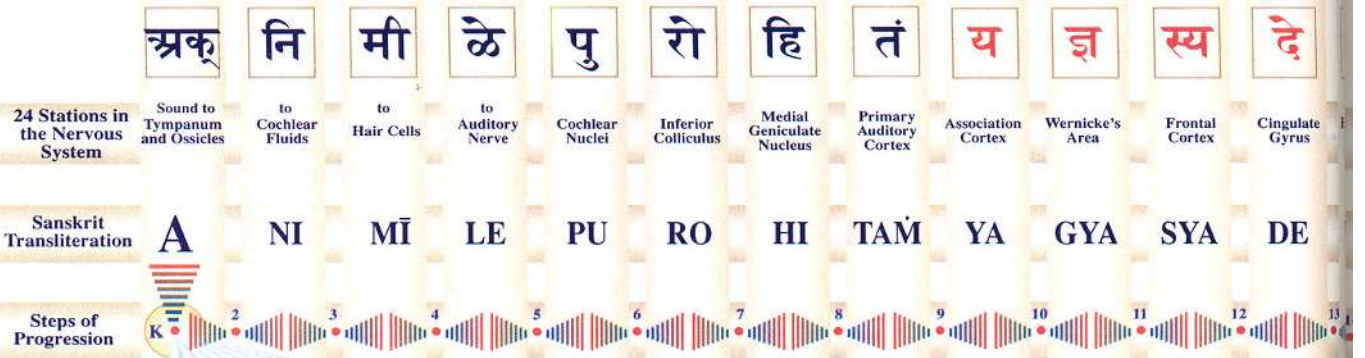


Figure 19

Figure 19 shows two small sections of the spinal cord spanning the length of two segments each. Two nerves, with their rootlets emerging on each side of the sections, are also shown. The nerve rootlets correspond to the Ṛichās and their nerves correspond to the Sūktas. In the anterior view, two autonomic ganglia are also shown on each side of the cord.

RISHI

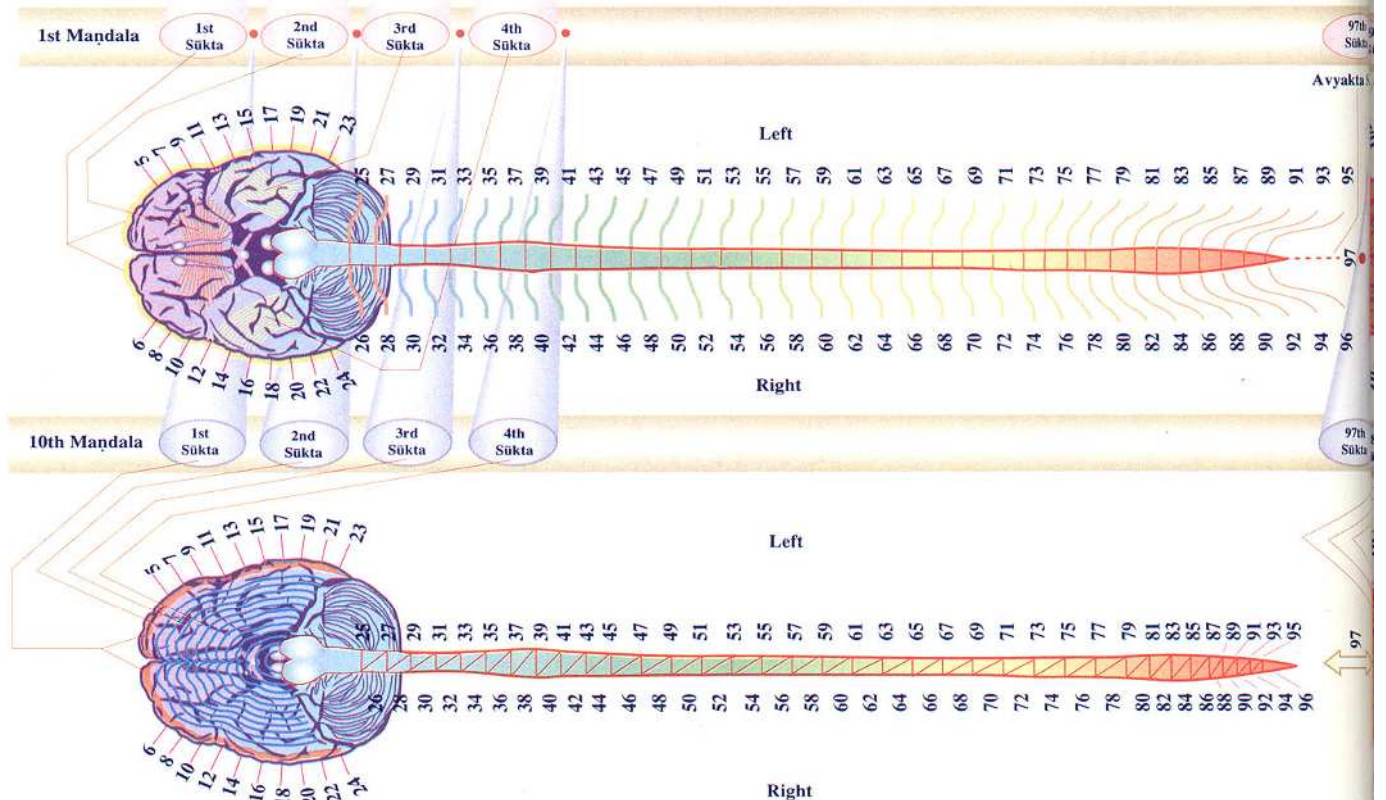
DEVAT

NEUROPHYSIOLOGY OF HEARING
(RISHI)NEUROPHYSIOLOGY OF PRO
(DEV)

The 8 Prakritis are expressed by:

1. AH = Ahamkāra
2. BU = Buddhi
3. MA = Manas
4. AK = Ākāśha
5. A = Vāyu
6. AG = Agni
7. JA = Jala
8. PR = Prithivī

AH 1	BU 1	MA 1	AK 1	VA 1	AG 1	JA 1	PR 1	AH 2	BU 2	MA 2	AK 2
AH 4	BU 4	MA 4	AK 4	VA 4	AG 4	JA 4	PR 4	AH 5	BU 5	MA 5	AK 5
AH 7	BU 7	MA 7	AK 7	VA 7	AG 7	JA 7	PR 7	AH 8	BU 8	MA 8	AK 8
AH 10	BU 10	MA 10	AK 10	VA 10	AG 10	JA 10	PR 10	AH 11	BU 11	MA 11	AK 11
AH 13	BU 13	MA 13	AK 13	VA 13	AG 13	JA 13	PR 13	AH 14	BU 14	MA 14	AK 14
AH 16	BU 16	MA 16	AK 16	VA 16	AG 16	JA 16	PR 16	AH 17	BU 17	MA 17	AK 17
AH 19	BU 19	MA 19	AK 19	VA 19	AG 19	JA 19	PR 19	AH 20	BU 20	MA 20	AK 20
AH 22	BU 22	MA 22	AK 22	VA 22	AG 22	JA 22	PR 22	AH 23	BU 23	MA 23	AK 23



VEDA: ing of the Physiology

CHHANDAS

ING THE HEARD SOUND

NEUROPHYSIOLOGY OF THE RESPONSE TO THE HEARD SOUND
(CHHANDAS)

MAṆDALAS

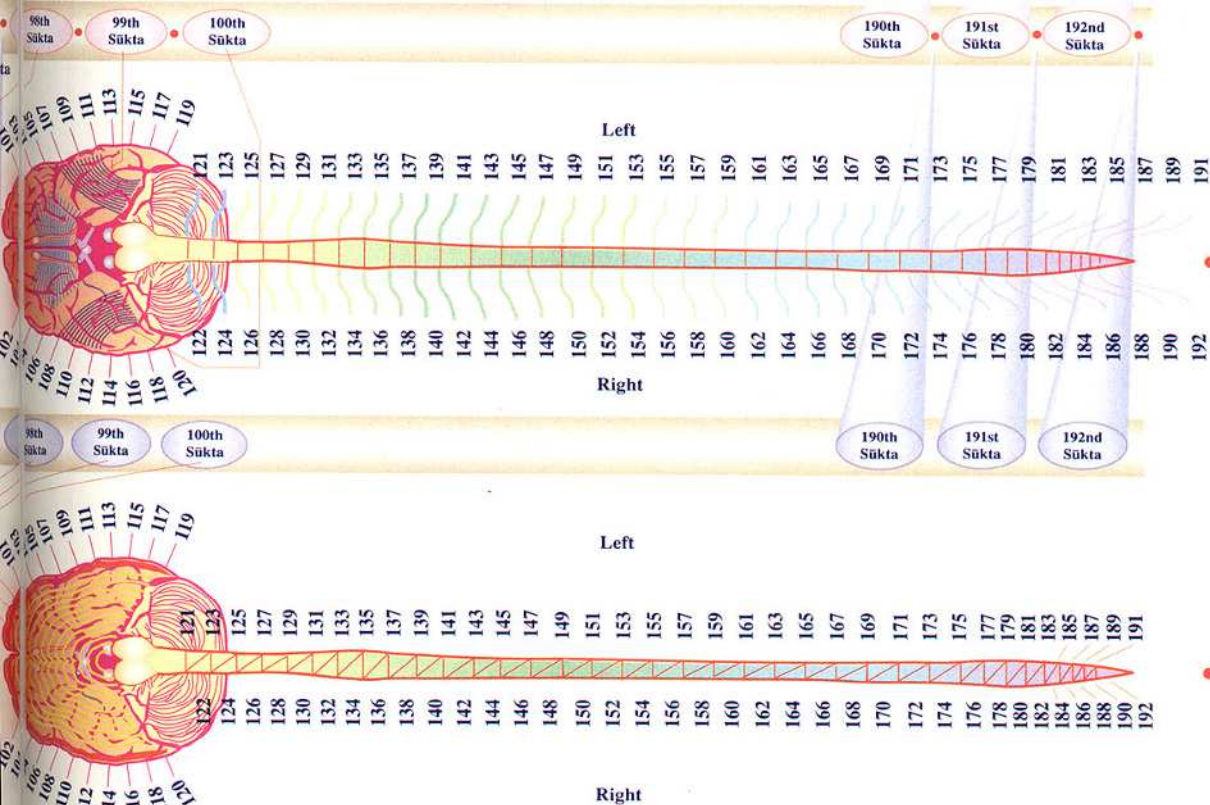
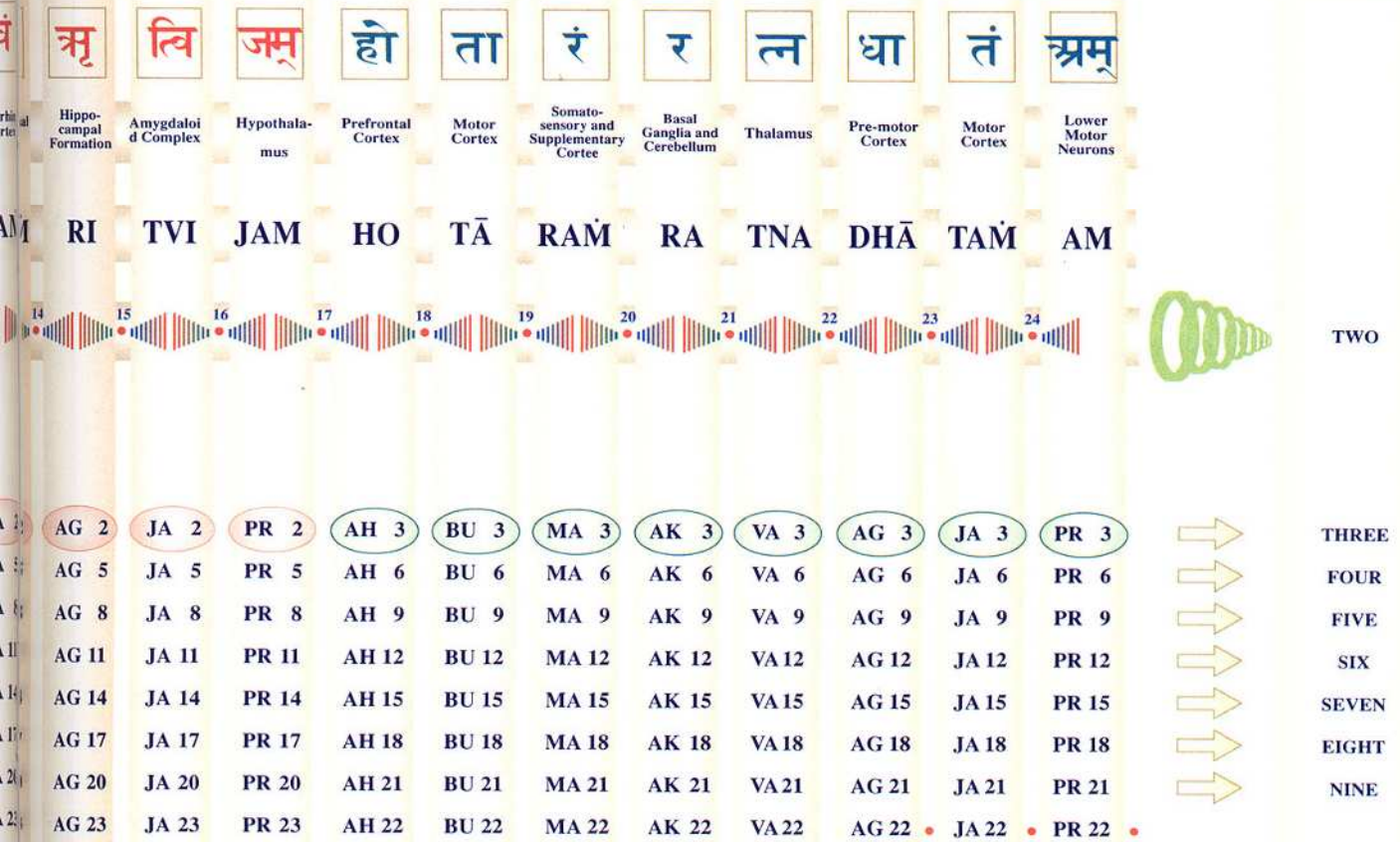


Figure 20. This shows an overall view of the structure of Rk Veda in the physiology. The Sanskrit letters in the boxes on top of the figure correspond to the first Richā with 24 syllables. The 24 stations of the nervous system corresponding to the 24 syllables are also shown with their transliteration.

The entire Rk Veda sequentially emerges as described in the text of Chapter IV.

CHAPTER V

The Vedic Literature in the Physiology

The 36 branches of the Vedic Literature have been located as the structural and functional components of the physiology. They constitute the structuring dynamics of Veda. This chapter has been divided into 36 sections. Each section will take one of the aspects of the Vedic Literature and show how the human physiology corresponds in its structure and function to the 36 aspects of the Vedic Literature.

In the following sections, when we say ‘predominantly Ṛishi’ or ‘predominantly Devatā’ or ‘predominantly Chhandas’, it means that the specific aspect of the Vedic Literature being considered never loses its holistic value of Saṁhitā (togetherness) of all three values (Ṛishi, Devatā, and Chhandas). Yet at the same time, one of the three values is more expressed than the other two. The other two are still operating, but in a more latent way.

1. SĀMA VEDA: Sensory Systems

*The Totality
of the Sensory
and Perceptual
Apparatus*

Sāma Veda is the sum total of all that is pertaining to Samhitā with a predominance of Ṛishi—observer value. Sāma Veda represents the totality of the sensory systems and perceptual apparatus, including receptors, channels, pathways, and the structures involved in organizing, maintaining balance, and identifying and decoding inputs and information. The wakeful physiology receives all the flow of experience through these channels. They sustain the quality of **flowing wakefulness**.

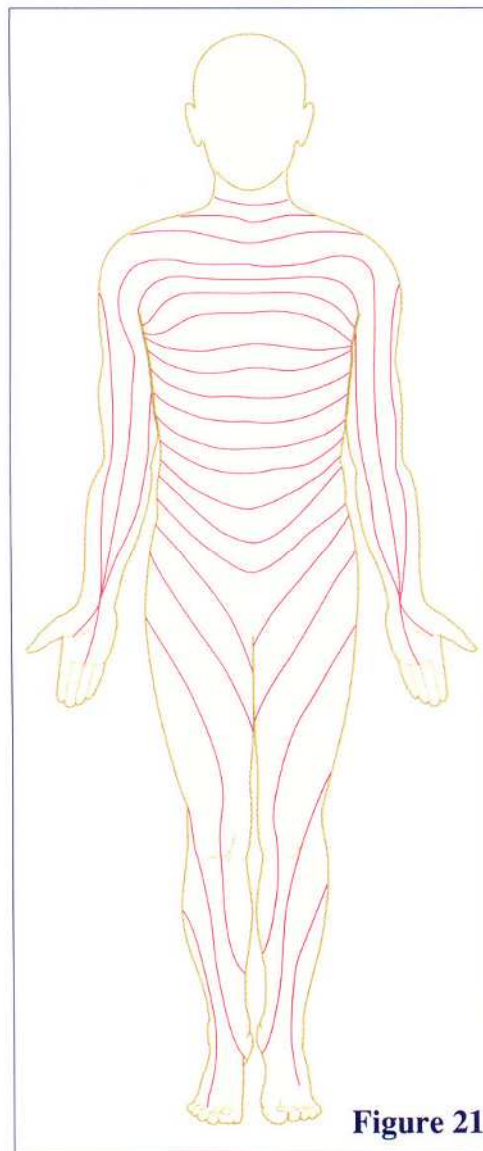


Figure 21

Figure 21 shows the dermatomes related to the spinal sensory nerves as an illustration of Sāma Veda, which represents the totality of the Ṛishi value (knower, wakefulness, and all sensory aspects in the five sensory modalities).

There are 1000 Shākhās, or branches of Sāma Veda. They correspond in the human body to 1000 'doorways' of perception as follows:

There are 60 dermatomes corresponding to the 30 spinal nerves on each side of the body (the fifth sacral dermatome also covers the coccygeal nerves). There are 14 types of receptor cells (nociceptors and cutaneous, subcutaneous, muscle and skeletal mechano-receptors). For all 60 dermatomes, we have therefore $60 \times 14 = 840$ 'doorways' of perception.

In addition, the cranial nerves give 160 'doorways' as follows:

- Olfactory nerve (I); 2 nerves with one modality = **2**
- Optic nerve (II); 2 nerves with 4 types of cells:
1 rod and 3 cones (blue, green, and red), $2 \times 4 = 8$
- Trigeminal nerve (V); 2 nerves with 14 modalities (as in spinal nerve), $2 \times 14 = 28$
- Facial nerve (VII); 2 nerves with 14 modalities (as in spinal nerve) + taste (5 types of taste), $2 \times 19 = 38$
- Cochlear nerve (VIIIa); 2 nerves with 1 modality (hearing), $2 \times 1 = 2$
- Vestibular nerve (VIIIb); 2 nerves with 1 modality (balance), $2 \times 1 = 2$
- Glossopharyngeal nerve (IX); 2 nerves with 14 modalities (as in spinal nerve) + taste (5) + carotid body and carotid sinus (2), therefore: $2 \times (14 + 5 + 2) = 42$
- Vagus nerve (X); 2 nerves with 14 modalities (as in spinal nerve) + taste (5), therefore: $2 \times 19 = 38$

If we add up all the 'doorways' of the senses through the cranial nerves, we find $2 + 8 + 28 + 38 + 2 + 2 + 42 + 38 = 160$. If we add 160 to the 840 from the spinal cord levels, we come to **1000** different doorways corresponding to the number of Shākhās in Sāma Veda.

2. YAJUR-VEDA: Processing Systems

*The
Transforming,
Processing,
and Interpreting
Apparatus*

Yajur-Veda is the sum total of all that is pertaining to Samhitā with a predominance of Devatā—process of observation value. Yajur-Veda represents the totality of the transforming, processing, and interpreting apparatus. It is within these structures in the physiology that inner creativity and its outer expressions are elaborated.

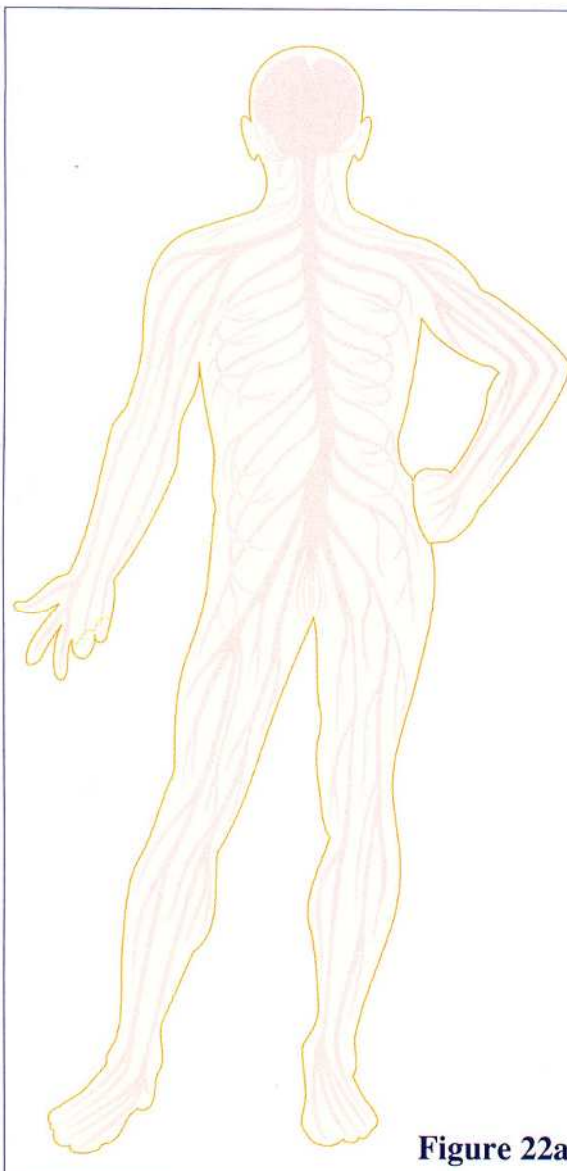


Figure 22a

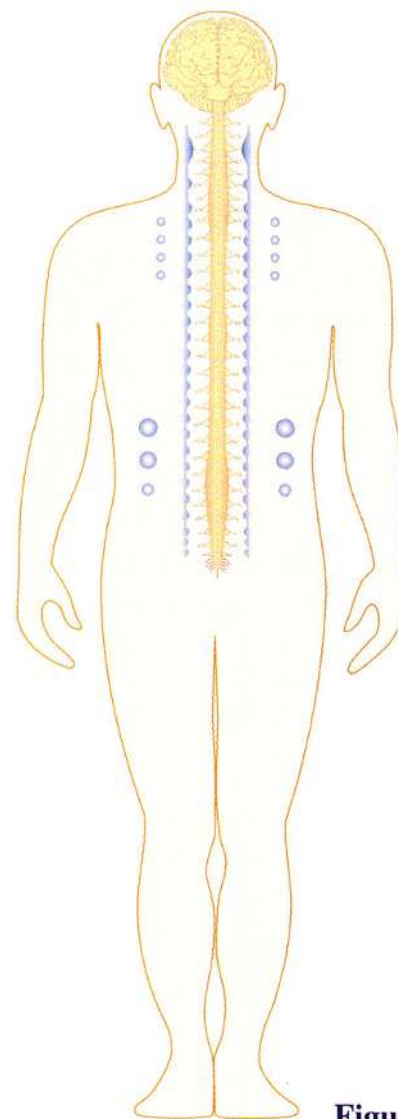


Figure 22b

Figure 22a shows a sketch of the nervous system as an illustration of Shukla Yajur-Veda (see text for more details).

Figure 22b shows a sketch of the autonomic ganglia as an illustration of Kṛishṇa Yajur-Veda (see text for more details).

In Maharishi's Vedic Science Yajur-Veda is given the quality of **sacrificing (evolutionary)**. The term Yaj means: to sacrifice. This has been traditionally understood to refer to the ceremonies during which offerings such as ghee are put in the fire (offered to Agni¹).

*Yajur-Veda as
a physiological
process*

Physiologically the functions of Yajur-Veda are fulfilled through the processing systems, which include all aspects of metabolism—metabolism not only of ingested food but also of any experience. This is the processing of experience.

Hearing and seeing, for example, can be considered as the processing (i.e. metabolizing) of sound and light respectively. The input (i.e. food, sound, light, etc.) are the elements which are being processed. They are like the ghee offered in the sacrificial fire. The processing systems are the 'fire' which digests or metabolizes the offering². Every sensory experience is therefore a special type of sacrifice being offered and metabolized through the processing systems of the body.

The results of a Yajur-Vedic offering (sacrifice) are said to depend on the intention. For even though the same ghee is offered, the performance has a special intention (Sankalpa) which leads to a special result. In the same way, the same sensory inputs can lead to different reactions depending on the interpretation one makes of them and the intention one has.

The same light, for example, coming through the eyes with different angles and wavelengths produces the experiences of different objects; and the interpretation and reaction to the same sight depend on the mental and physiological dispositions of the individual. The sight of a particular person could be experienced as the sight of a friend or a foe by different individuals; leading to completely different types of reactions and behaviour (i.e., different types of results of the processing of this experience or, in Yajur-Vedic terms, different results of the sacrifice).

Structure of Yajur-Veda

Yajur-Veda is divided into two categories: Shukla (white) and Kṛishṇa (black). Shukla has 15 Shākhās (divisions) organized into two groups: Mādhyandini and Kāṇwa³. Kṛishṇa has 85 Shākhās (divisions)⁴.

1 Agni means fire and also metabolism.

2 One quality of fire is to give light; i.e. remove the darkness. This is also the function of the processing systems in the physiology. A sensory input will not be experienced (one remains 'blind' to it) if there is no wakeful alert processing of the input. A sound, for example, will reach the ear tympanum and be carried through the pathways of hearing, but if the person is sleeping the sound will not be processed and therefore will not be heard. This also happens when there is damage to the processing systems. Further elaboration of this point and its relevance to the study of the relationship of Veda and the physiology will be presented in a later section discussing the term Kāṇwa.

3 Some consider Mādhyandini and Kāṇwa as two Shākhās and say that the other 13 have been lost. According to Maharishi's Vedic Science and the physiological confirmation described in this book, these two (Mādhyandini and Kāṇwa) contain all 15 Shākhās.

4 According to Mahāvāshya, Yajur has a total of 101 Shākhās; according to Muktopanishad, there are 109. The reason for this discrepancy will be discussed later in the text.

In the physiology, the processing systems are grouped into two categories: The processing of somatic inputs, which are open to conscious awareness, corresponding to Shukla Yajur-Veda; and the processing of visceral or autonomic inputs, largely not open to conscious awareness and not under conscious control, corresponding to Kṛishṇa Yajur-Veda.

The term Shukla, meaning 'white', refers to the somatic, 'open, seen, conscious' system, while the term Kṛishṇa, meaning 'black', refers to the visceral or autonomic, 'closed, hidden, subconscious' system.

The somatic processing systems correspond to Shukla Yajur-Veda

The somatic inputs correspond to the inputs that are consciously experienced through the body's surface and somatic organs. They are channelled by means of the 1000 doorways of perception described under Sāma Veda (see Chapter V, Section 1).

There are 15 modalities of perception corresponding to the 15 Shākhās of Shukla Yajur-Veda. They are also divided into two groups:

1. The first group of modalities of perception are those that detect inputs coming from outside the body: (1) sound, (2) sight, (3) taste, (4) smell, (5) cold, (6) heat, (7) sharp pricking pain, (8) slow burning pain, (9) skin flutter, (10) steady skin indentation, (11) vibration, and (12) hair flutter. This group of somatic sensations corresponds to the group of Kāṇwa in Shukla Yajur-Veda.

The term Kāṇwa is made out of the following syllables: 'Ka', 'A', 'Na', 'Wa'. The significance of the syllables 'Ka', and 'A', has been thoroughly discussed in Chapters II and III. In brief 'Ka' refers to collapse or zero value and 'A' refers to infinite or full value. These have also been correlated in Chapter IV with the collapse of sensory experience onto the peripheral receptors, constituting the first step which leads to the subsequent steps of transmission, processing and elaboration of the sensory experience (see Chapter IV, Figure 10: the first Rīchā of Ṛk Veda). 'Ka' and 'A' therefore represent the full range of possibilities from infinite silence to infinite dynamism. The syllable 'Na' means 'not', it stands for negation and the syllable 'Wa' means 'or'. 'Nwa' mean: either/or or neither/nor. This gives the full range of possibilities for the results of any processing of sensory experience (i.e., the reaction to any sight, sound, taste, impression, action, etc.). This can either be full silence or full dynamism; or neither full silence nor full dynamism—anywhere between wholeness of silence and wholeness of dynamism. The term Kāṇwa, therefore, clearly defines the full potential of the processing of any experience, or, in other words the full potential of the metabolism of any sensory experience or object of perception. In Yajur-Vedic terms we could say: the full potential of the result of the offering (sensory input) given into the sacrificial fire (the metabolic processes).

2. The second group of modalities of perception are those that detect somatic sensations such as position in space and balance with reference to the body. These are: (1) balance, (2) limb proprioception, and (3) joint capsule pressure. Middle points of position, tension or pressure in the limbs and joints serve as a reference on the basis of which this type of sensory modality is evaluated. This group of somatic sensations corresponds to the group of Mādhyandini in Shukla Yajur-Veda. The term Mādhyandini means: 'with reference to the middle point'.

The visceral processing systems correspond to Kṛishṇa Yajur-Veda

The visceral inputs and outputs are channelled by means of the autonomic ganglia and the autonomic nuclei of the cranial nerves. There are 36 autonomic ganglia on each side of the body, making a total of 72. With the so-called 'head ganglion' (i.e., the hypothalamus) there are 73. There are six autonomic nuclei of the cranial nerves on each side, making a total of 12. These six are: the Edinger-Westphal nucleus; the superior salivatory nucleus; the inferior salivatory nucleus; the dorsal vagal nucleus; the nucleus ambiguus; and the solitary tract nucleus. Together they make $73 + 12 = 85$. These correspond to the 85 Shākhās of Kṛishṇa Yajur-Veda as mentioned in Charaṇavyūha. The pituitary gland is a master gland for hormonal secretions which plays a very important role in autonomic functions. It can therefore also be included as part of this system. With the pituitary gland, this gives 86, the total number of Shākhās. And for the whole Yajur-Veda we come to 101 Shākhās as mentioned in Mahāvāshya: 86 for Kṛishṇa Yajur-Veda and 15 for Shukla Yajur-Veda. If we count the hypothalamus and pituitary as 8 and 2 respectively (the hypothalamus having 8 regions and the pituitary two), we get 109 Shākhās as described in Muktopanishad.

Of the 85 Shākhās of Kṛishṇa Yajur-Veda, only four are said to be available as Vedic texts. In reality, these four (Maitrayani, Taittiriya, Kāthak, and Kāpishthal) contain all the 85 Shākhās, in the same way as the two categories of Shukla contain all its 15 Shākhās.

In the physiology, the four categories of Kṛishṇa Yajur-Veda correspond to the four aspects of visceral and autonomic nervous system. They are: (1) the sympathetic excitatory, (2) the sympathetic inhibitory, (3) the parasympathetic excitatory, and (4) the parasympathetic inhibitory.

The somatic modalities are channelled through or controlled by the thalamus— Shukla Yajur-Veda is associated with the Sun (Sūrya)

The 15 somatic modalities, which in the physiology correspond to the 15 Shākhās of Shukla Yajur-Veda, are channelled through a midline structure in the brain called the thalamus. As will be described later in Jyotish (see Chapter V, Section 12), the thalamus corresponds to Sūrya (the Sun). In the Vedic literature, Shukla Yajur-Veda is also associated with Sūrya.

Bhagavad Gītā 8.24

अग्निर्ज्योतिरहः शुक्लः *agnir jyotir ahaḥ shuklaḥ*
 षण्मासा उत्तरायणम् । *ṣaṇmāsā uttarāyaṇam*
 तत्र प्रयाता गच्छन्ति *tatra prayātā gachchhanti*
 ब्रह्म ब्रह्मविदो जनाः ॥२४॥ *brahma brahma-vido janāḥ.*
Fire, light, day, the Shukla (bright) half of the month,
and the year—departing by this path, the men who
know Brahman go to Brahman.

**The visceral and autonomic modalities are channelled through
or controlled by the hypothalamus—**

Kṛishṇa Yajur-Veda is associated with the moon (Chandra)

Situated below the thalamus is a structure called the hypothalamus. It corresponds to Chandra, as will be described later in Jyotish (see Chapter V, Section 12). The hypothalamus is the master processor and orchestrator of the visceral and autonomic nervous system, which correspond to the 85 Shākhās of Kṛishṇa Yajur-Veda. In the Vedic literature, Kṛishṇa Yajur-Veda is also associated with the Chandra.

Bhagavad Gītā 8.25

धूमो रात्रिस्तथा कृष्णः *dhūmo rātris tathā kṛishṇaḥ*
 षण्मासा दक्षिणायनम् । *ṣaṇmāsā dakṣhiṇāyanam*
 तत्र चान्द्रमसं ज्योति- *tatra chāndramasaṁ jyotir*
 योगी प्राप्य निवर्तते ॥२५॥ *yogī prāpya nivartate.*
Smoke, night, likewise the Kṛishṇa (dark) half of the
month, and the year—departing by this path the yogi
gains the light of the moon and returns.

Bhagavad Gītā 8.26

शुक्लकृष्णो गती ह्येते *shukla-kṛishṇe gatī hyete*
 जगतः शाश्वते मते । *jagataḥ shāshvate mate*
These two, Shukla and Kṛishṇa (the bright and the
dark), are held to be the world's eternal paths.

**The reticular activating system of the brain stem activates and
de-activates the processing systems—**

The Ashwins remove the blindness of Kaṇwa

Sensory inputs on the physiology are carried through sensory channels as described earlier for the sense of hearing (see Chapter IV). These however do not reach conscious awareness unless there is wakefulness. During sleep, we are as if blind to all outer sensory inputs.

Waking and sleeping are controlled by the brain stem nuclei, in particular those that are part of the reticular activating system. The process of waking up in the morning, for example, involves the activation of the brain by these nuclei. When we wake up

from sleep, it is as if the doorways of the senses get opened to conscious awareness. The sensory inputs get integrated and processed by the thalamus and sent to the cortex. Recent scientific discoveries show that the thalamus is closely connected with awareness, and that the brain stem nuclei can modulate its level of 'wakefulness' or 'responsiveness'.

When activated, therefore, the thalamus can 'see' the sensory inputs. The sensory processing systems become alert and open to the senses.

The processing of the somatic sensory inputs has been described above to be associated with the term Kāṇwa and the thalamus with the sun (Sūrya). We will see later, (Chapter V, Section 12) that the brain stem nuclei are associated with the Nakshatras of which the Nakshatra Ashwinī is the first. The activation of the processing systems (Kāṇwa) by the reticular activating system (Ashwins or Ashwinī⁵), in the morning, opening up the activity of the thalamus (the Sun) and removing the veil of sleep which covers perception ('curing from blindness') can be seen to be accurately described in the following verses of the Vedic Literature:

Rk Veda 1.117.5

सुषुप्वांसं न निर्वृतिरुपस्थे सूर्यं न दस्त्रा तमसि क्षियन्तम् ।
शुभे रुक्मं न दर्शतं निखातं मुदूपथुरश्विना वन्दनाय ॥

*Sushupvāmsaṁ na nirvṛterupasthe sūryam na dasrā tamasi kshiyantam
Shubhe rukmaṁ na darshataṁ nikhāta mudūpathu rashvinā vandanāya*

*You extricated, Dasrās, the sage (Vandana) cast into a well,
like a handsome and splendid ornament designed for embellishment, and (lying) Ashwins, like one sleeping on the lap of
the earth or like the sun disappearing in darkness.*

Rk Veda 1.117.8

युवं श्यावाय रुशतीमदत्तं महः क्षोणस्याश्विना कण्वाय ।
प्रवाच्यं तद् वृषणा कृतं वा यन्नार्षदाय श्रवो अध्यधत्तम् ॥

*Yuvaṁ shyāvāya rushatīmadattaṁ mahah kshoṇasyāshvinā kaṇwaya
Pravāchyaṁ tad vṛishaṇā kṛitaṁ vāṁ yannārshadāya shravo adhyadhattam*

*You gave, Ashwins, a lovely bride to Shyāva; you gave sight
to Kaṇwa, unable to see his way; showerers (of benefits), the
deed is to be glorified by which you gave hearing to the son
of Nrishad.*

5 Ashwin is a name of the Nakshatra presided over by the Ashwins. The term Ashwin is also defined as the son of Sūrya (the Sun). The two Ashwins are said to come at dawn just before sunrise. They bring treasures to men and avert misfortune and sickness; they are considered as the physicians of Heaven.

The term Ashwinī is defined as the first of the 27 Nakshatras, the head of Aries and the wife or sometimes the mother of the Ashwins. This represents, physiologically, the brain stem nuclei that act as part of the reticular activating system and control the cycles of sleeping, dreaming and waking. Whereas Ashwinī can represent specific nuclei of the brain stem, Ashwins can be the neuronal fibers emerging from these nuclei and reaching the thalamus as well as the fibers emerging from the thalamus and reaching the brain stem. These nuclei and fibers are certainly of the same family!

Rk Veda 1.118.7

युवमत्रयेऽवनीताय तप्तमूर्जमोमानमश्विनावधत्तम् ।
युवं कण्वायापिरिप्ताय चक्षुः प्रत्यधत्तं सुष्टुतिं जुजुषाणा ॥

Yuvamatraye' vanītāya taptamūrjamomāna mashwināvadhattam
Yuvam kaṇwāyāpiriptāya chakshuḥ pratyadhattam sushṭutiṁ jujushāṇā

You (gave relief) to the imprisoned Atri, (quenching the) scorching heat, and fed him with grateful food; solicitous of worthy praise, you gave sight to Kaṇwa, blinded (by darkness).

Rk Veda 8.8.23

त्रीणि पदान्यश्विनोराविः सान्ति गुहा परः ।
कवी ऋतस्य पत्नभिरवाङ्जीवेभ्यस्परि ॥

Trīṇi padānyashvinorāviḥ sānti guhā paraḥ
Kavī ṛitasya patmabhiravāṅjīvebhyaspari

The three wheels (of the chariot) of the Ashwins, which were invisible, have become manifest: do you two who are cognizant of the past, (come) by the paths of truth to the presence of living beings⁶.

⁶ This verse refers to three wheels, representing the three values of Rishi, Devatā, and Chhandas. Through the reticular activating system (represented by the two Ashwins) wakefulness is gained and the manifest world unfolds in the awareness of living beings. The reticular activating system plays a vital role in the brain stem which is itself the vital centre of the nervous system.

3. ATHARVA VEDA: Motor Systems

*The Effector
Apparatus and
the Organs
of Action*

Atharva Veda is the sum total of all that is pertaining to Samhitā with a predominance of Chhandas—observed, or object of observation value. Atharva Veda represents the totality of the musculo-skeletal system—the organs of action (see Figure 23).

This aspect of the physiology makes the totality of Veda move. This is the value of **reverberating wholeness**.

In Atharva Veda there are nine Shākhās or branches. The musculo-skeletal system is made of nine divisions as follows: (1) Head; (2) Neck; (3) Upper limbs; (4) Thorax; (5) Back; (6) Abdomen; (7) Pelvis; (8) Perineum; (9) Lower limbs.

If we assemble them into more specific groups, we can consider the right and left sides of the body, and therefore get $9 \times 2 = 18$ groups of muscles. If we add to this the two groups of muscles from inside the body, (muscles of the heart and muscles of the visceral organs), we get 20 sets of muscles. They correspond to the 20 Khāṇḍas, or subdivisions of Atharva Veda.

There are 206 bones in the body and an estimated 515 muscles, together $515 + 206 = 721$. They correspond to the number of Sūktas in Atharva Veda. Variations among the number of Sūktas in different branches of Atharva Veda could correspond to the variations in the principles used to include certain groups of muscle tissue or bones as separate or not. Also, the number of muscles in females is larger than that of males. For example: Another estimate puts the number of muscles at 600. If the number of bones were to include all sesamoid bones, which develop later in life, the number would be 225 bones. Therefore, $600 + 225 = 825$, which is the number of Sūktas in the second Shākhā of Atharva Veda. (Note: the two Shākhās of Atharva Veda referred to here are the only ones available out of the original nine).

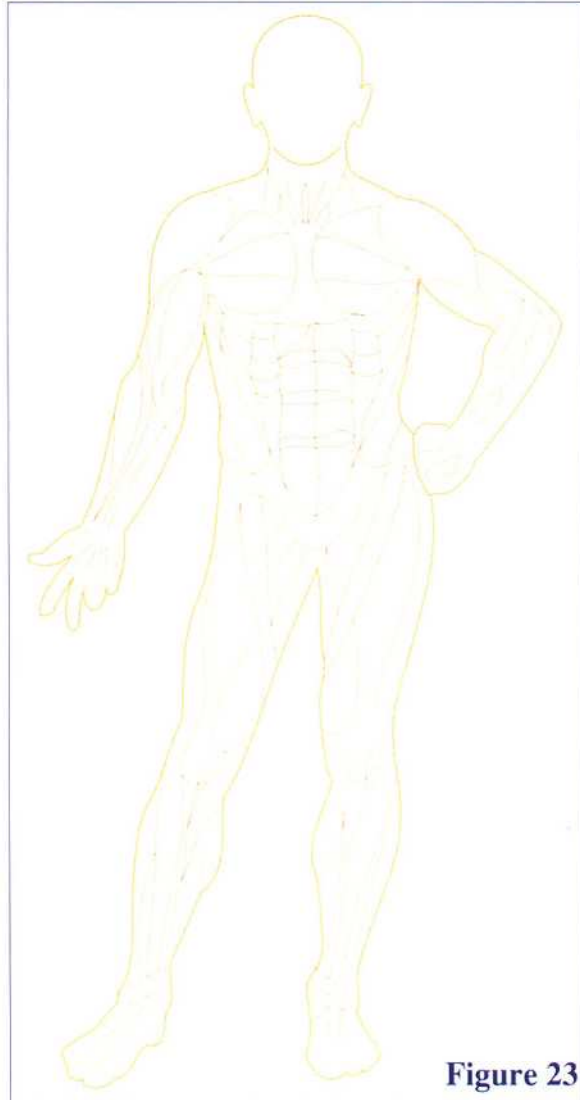


Figure 23

Figure 23 shows some of the muscle groups of the body as an illustration of Atharva Veda, representing Samhitā with a predominance of Chhandas value (covering, hiding, expanding, and moving).

4. STHĀPATYA VEDA:

Anatomy

Anatomy

Sthāpatya Veda represents the science of structure at the individual and cosmic levels. The perfect anatomy allows the experience of unboundedness within the individual well-defined structures of anatomy (see Figure 24a). It is the science which **establishes** wholeness through parts and has a predominantly Chhandas quality.

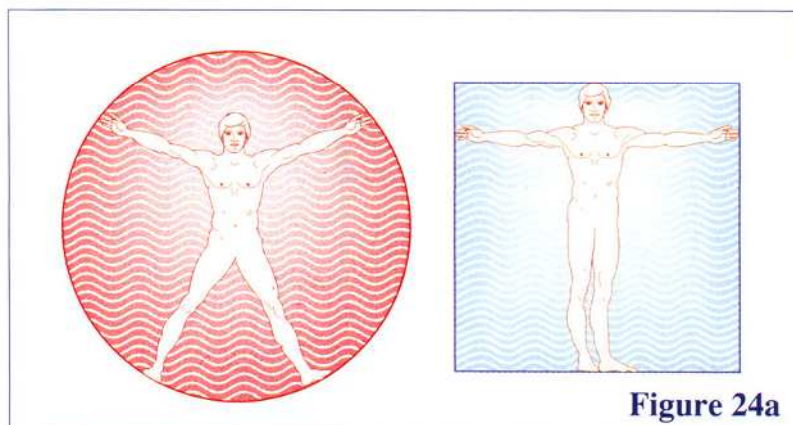


Figure 24a

Figure 24a shows the harmony of the human structure with respect to the eternal harmony of a circle and that of a square. The co-ordinated functioning of the cells, organs, and systems of the physiology with their various shapes and sizes establishes a wholeness which is more than the sum of its parts.

This holistic harmony, which permeates the individuality of all the components of the physiology, is established through Sthāpatya Veda. Sthāpatya Veda puts every component in its proper place so that no individual structure is out of alignment with the whole cosmic structure. Thus Sthāpatya Veda is the science and technology of establishing every individual in harmony with the universe.

The human anatomy, including the number of units that constitute its basic components (such as the number of vertebrae in the vertebral column and their divisions, the number of ribs, etc.), can be located in Sthāpatya Veda within its elaborate system of structures, their orientation, and divisions.

Figure 24b illustrates the establishing and structuring value of Sthāpatya Veda. The spinal cord with the nerves that emanate from it represent a major part of Veda—their structure is established by the principles of Sthāpatya Veda.

Here we see the structure of the spinal cord, which has 35 segments, divided into two symmetrical parts (right and left), making a total of 70 divisions. They correspond to the 70 chapters of Sthāpatya Veda.

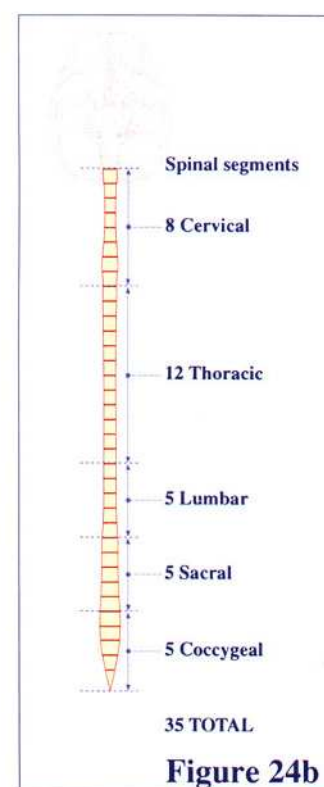
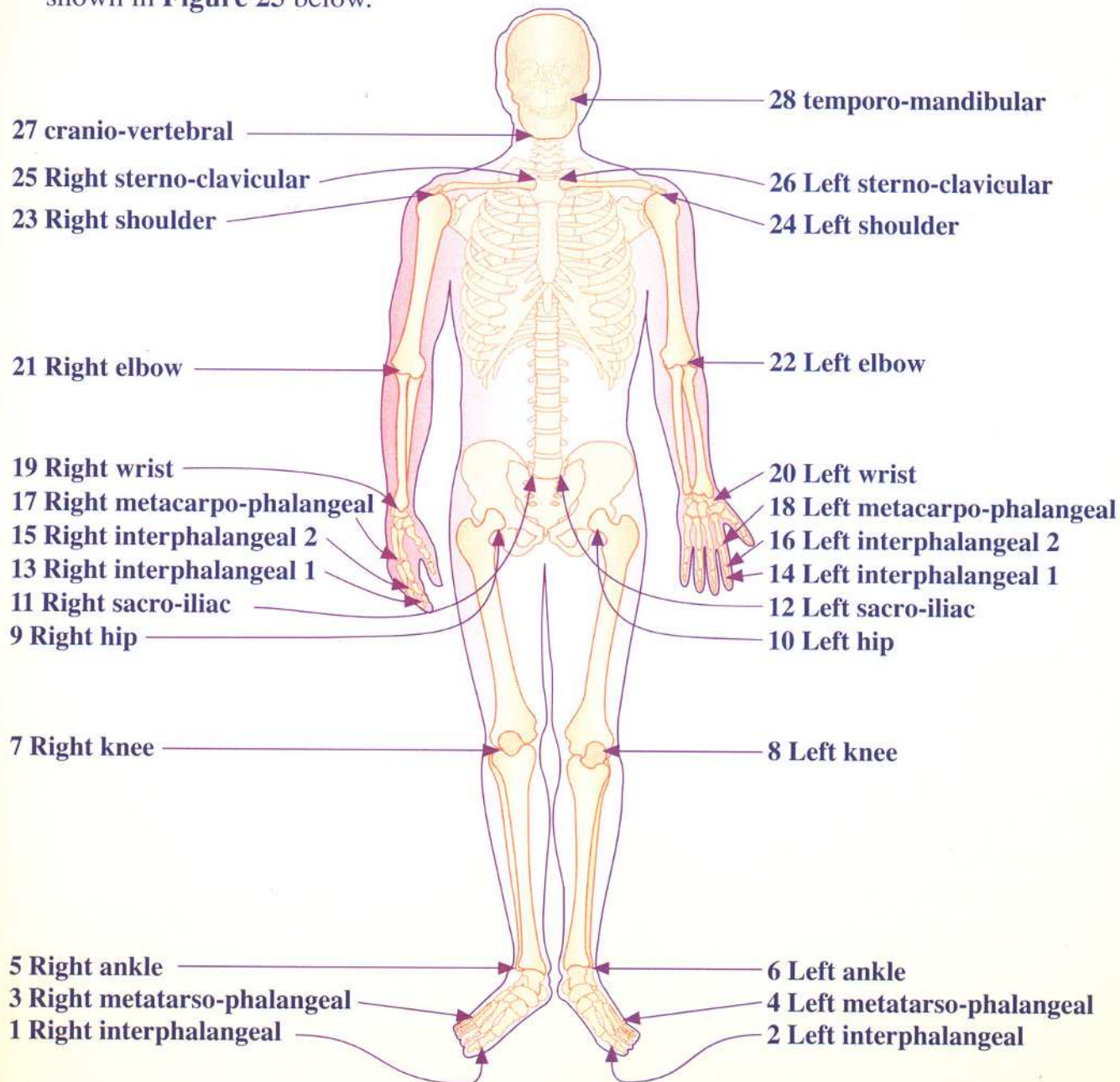


Figure 24b

ĀGAMA: Major Joint Levels

The silence of Āgama is a part of Sthāpatya Veda which deals with sculpture: how to make a sculpture or statue come to life. There are 28 Mūl Āgamas, they correspond to 28 levels of joint motility providing wide angle bending to the human body as shown in **Figure 25** below.



Names of the 28 Āgamas

corresponding to the 28 levels of joint motility indicated in the illustration above

1. Kāmikāgama	8. Sahasrāgama	15. Virāgama	22. Lalitāgama
2. Yogajāgama	9. Ansumānāgama	16. Rauravāgama	23. Sidhāgama
3. Chintyāgama	10. Suprabhedāgama	17. Makuṭāgama	24. Santānāgama
4. Kāranāgama	11. Vijayāgama	18. Vimalāgama	25. Sarvoktāgama
5. Ajitāgama	12. Nishvāsāgama	19. Chandra-jñānāgama	26. Parameshvarāgama
6. Dīptāgama	13. Swāyambhuvāgama	20. Bimbāgama	27. Kiraṇāgama
7. Sūkshmāgama	14. Analāgama	21. Prodgītāgama	28. Vātulāgama

5. DHANUR-VEDA:

Biochemistry, Enzymes, Immune System, Vertebral Column

*Enzymes,
Immune System,
Vertebral Column*

Dhanur-Veda represents the **invincible** quality of pure consciousness, which is able to always maintain its undisturbed, unchanging, and self-referral pure nature while upholding all transformations in the manifest creation. Their invincible quality insures that all diversity and change are maintained in the evolutionary direction, in perfect balance and order. Dhanur-Veda has a Devatā predominance. In the physiology, it is represented by all that maintains continuity within evolution and change. This is seen in the DNA, the biochemical and enzymatic reactions, the immune system, and the skeletal system.

Below are shown three illustrations of Dhanur-Veda at three different levels in the physiology. The first illustration (26a) shows the DNA, which, in its self-referral silence and dynamism, is projected into the entire human physiology (the 'Self' of DNA—Ātmā—is projected into the entire diversity of the body—Brahm). The second illustration (26b) shows biochemical reactions, which project one state into another. The arrows between molecules represent the value of transformation similar to the theme of 'bow and arrow' in Dhanur-Veda (Dhanu means bow, Dhanur-Veda is the knowledge of archery; the arrows represent the value of transformation).

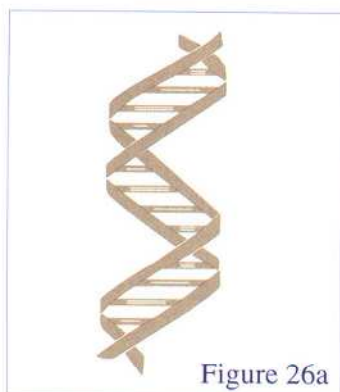


Figure 26a

The biochemical reactions are constantly transforming all the components that structure the human physiology. There is a dynamic state of equilibrium or homeostasis. Molecules are being continuously destroyed and new ones produced. Yet the body maintains its structural and functional integrity. This shows the **invincible** aspect of the physiology, which maintains continuity in change. The third illustration (26c) shows the vertebral column. Each vertebra is divided into four parts, corresponding to the four chapters of Dhanur-Veda. There are 33 vertebrae. Every chapter in Dhanur-Veda contains a number of Sūtras which in every case is a multiple of 33, reflecting exactly the structure and function of the vertebral column.

Figure 26a shows the double helical DNA

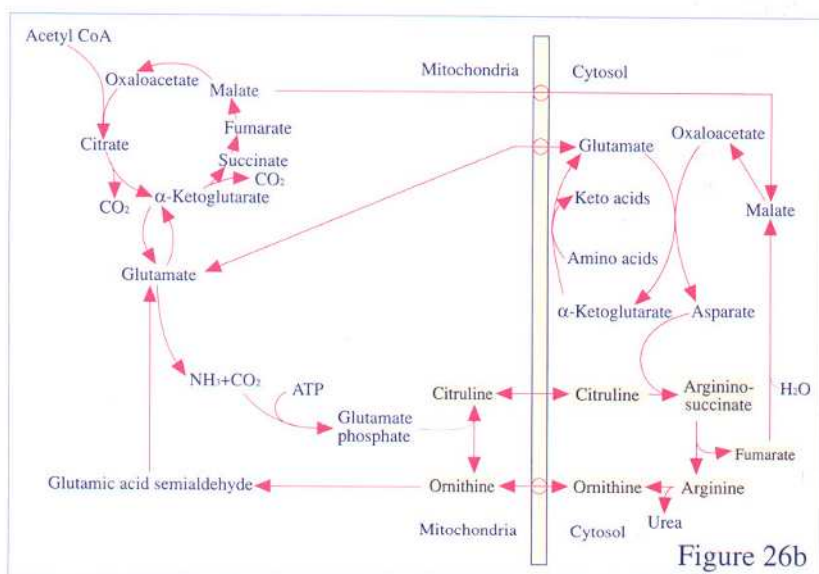


Figure 26b

Figure 26b shows the interactions between the urea and the TCA cycle as an illustration of the continuous destruction and rebuilding taking place in the physiology.

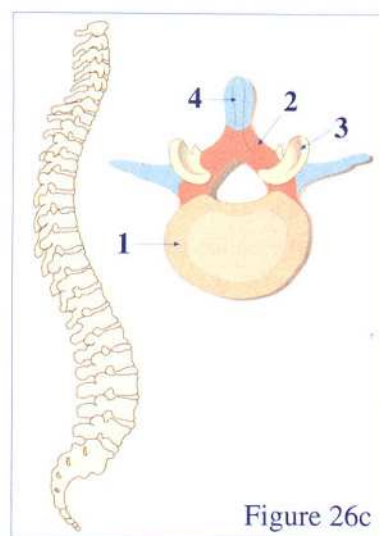


Figure 26c

Figure 26c shows the vertebral column. Its shape, similar to a bow, reminds one of Dhanur-Veda (Dhanu means bow).

6. GANDHARVA VEDA: Rhythms and Cycles, Pacemaker Cells

Rhythms

Gandharva Veda represents the **integrating** quality of consciousness. It has predominantly a Rishi quality. Gandharva Veda is all the cycles and rhythms of the physiology (hormonal secretion, metabolism, cardiac rhythms, circadian rhythms, etc.), which keep the mind and body in tune with the rhythms of Nature (see Figure 27).

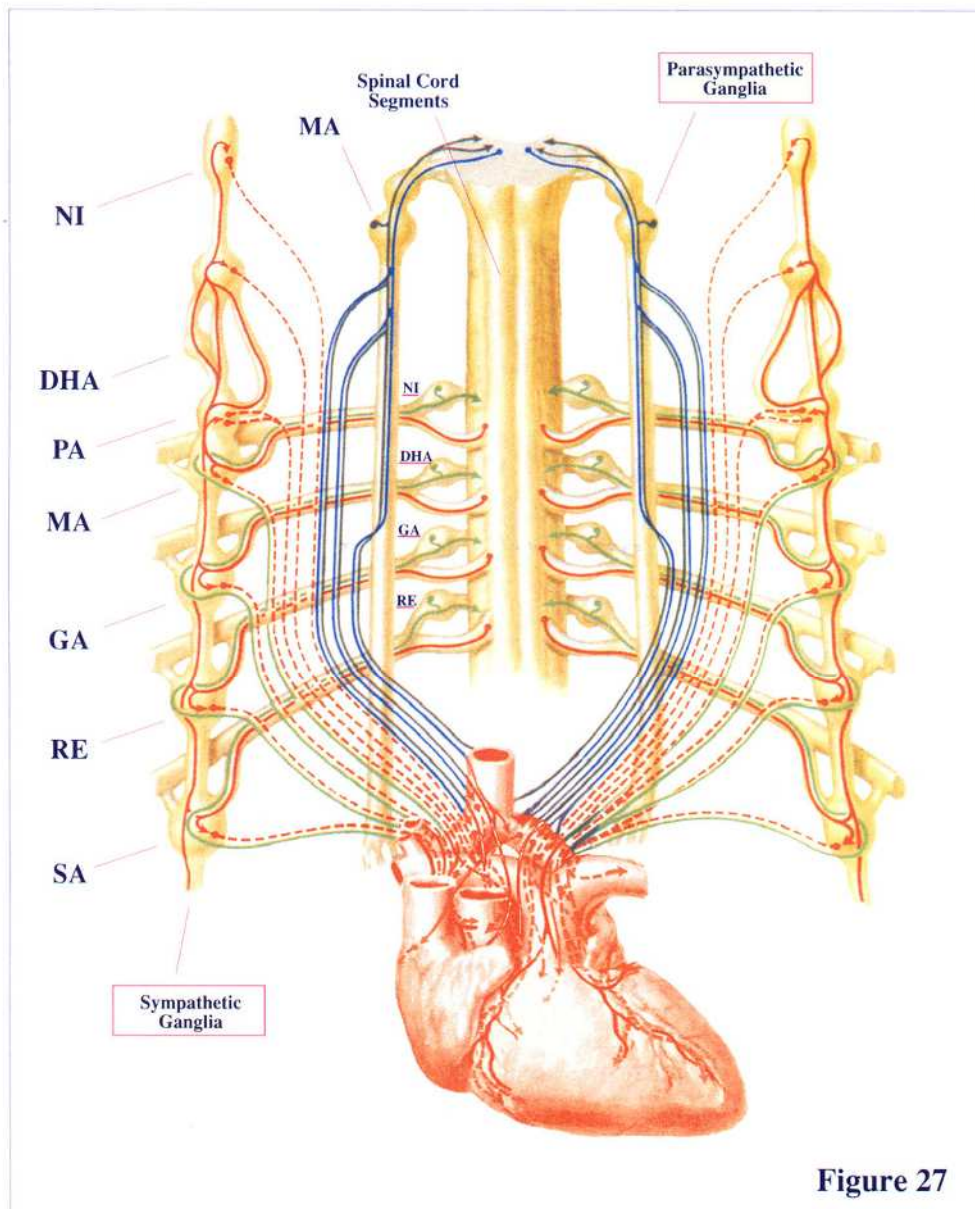


Figure 27

Figure 27 shows the heart and its neuronal innervation as an illustration of Gandharva Veda. Seven sympathetic ganglia on each side of the spinal cord participate in the modulation of the rhythms of the heart. They correspond to the seven swaras (musical notes – SĀ, RE, GA, MA, PA, DHA, and NI). These impulses are connected to the four thoracic segments, which correspond to the flat notes RE, GA, DHA and NI. The parasympathetic (vagal) innervation corresponds to the sharp note MA.

7. SHIKSHĀ:

Body Parts Associated with the Autonomic Ganglia

Shikshā represents the **expressing** quality of self-referral consciousness with reference to Rishi within the nature of Samhitā. There are 36 main books of Shikshā. In the physiology, Shikshā is represented by the structures which compute and **express** the internal aspects of the physiology, such as its biochemical constituents, temperature, pressure, etc. (the expression

Anatomic Name of Ganglia		Shikshā 36 Books		
1	Ciliare	1	याज्ञवल्क्य	Yāgyavalkya
2	Pterytopalatinum	2	वासिष्ठी	Vāsishthī
3	Oticum	3	कात्यायनी	Kātyāyanī
4	Submandibulare	4	पाराशरी	Pārāsharī
5	Coeliacum	5	माण्डवी	Māndavī
6	Mesentericum superius	6	अमोघानन्दिनी	Amoghā Nandinī
7	Mesentericum inferius	7	लध्वमोघानन्दिनी	Ladhvamoghānandinī
8	Cervicale superius	8	माध्यन्दिनीय	Mādhyandinīya
9	Cervicale medium	9	लघुमाध्यन्दिनीय	Laghumādhyandinīya
10	Cervico-thoracicum	10	वर्णरत्नप्रदीपिका	Varna Ratna Pradīpikā
11	T1 Sympathetic	11	केशवी	Keshavī
12	T2 Sympathetic	12	मल्लशर्मकृता	Mallasharmakṛitā
13	T3 Sympathetic	13	स्वराङ्कुश	Swarānkusha
14	T4 Sympathetic	14	षोडशश्लोकी	Shodasha Shlokī
15	T5 Sympathetic	15	अवसान निर्णय	Avasāna Nirṇaya
16	T6 Sympathetic	16	स्वरभक्ति लक्षणपरिशिष्ट	Swarabhakti lakshanaparishishta
17	T7 Sympathetic	17	क्रमसन्धान	Kramasandhāna
18	T8 Sympathetic	18	गलद्रिक	Galadrik
19	T9 Sympathetic	19	मनःस्वार	Manahswāra
20	T10 Sympathetic	20	प्रातिशाख्यप्रदीप	Prātishākhya Pradīpa
21	T11 Sympathetic	21	विसर्गाङ्कुलिप्रकार	Visargānkuli Prakār
22	T12 Sympathetic	22	यजुर्विधान	Yajur-Vidhāna
23	L1 Sympathetic	23	स्वराष्टक	Swarāstaka
24	L2 Sympathetic	24	क्रमकारिका	Krama Kārikā
25	L3 Sympathetic	25	पाणिनीय	Pāṇinīya
26	L4 Sympathetic	26	शिक्षाप्रकाशः	Shikshā Prakāśhah
27	L5 Sympathetic	27	नारदी	Nārādī
28	S1 Sympathetic	28	गौतमी	Gautamī
29	S2 Sympathetic	29	लोमशी	Lomashī
30	S3 Sympathetic	30	माण्डुकी	Māndūkī
31	S4 Sympathetic	31	व्याली	Vyālī
32	S5 Sympathetic	32	अथर्वपरिशिष्ट	Atharva Parishishta
33	Co Sympathetic	33	अमरेशी	Amareshī
34	S2 Parasympathetic	34	वेदसूत्रपरिभाषा	Veda Sūtra Paribhāshā
35	S3 Parasympathetic	35	कालनिर्णय	Kāla Nirṇaya
36	S4 Parasympathetic	36	व्यास	Vyāsa

of the autonomic nervous system). They are the components that maintain the homeostatic balance of the internal milieu. These expressions are channelled via the autonomic ganglia. These are 36 on each side of the spinal cord, corresponding to the 36 books of Shikshā (see Figure 28 below).

Location in Physiology

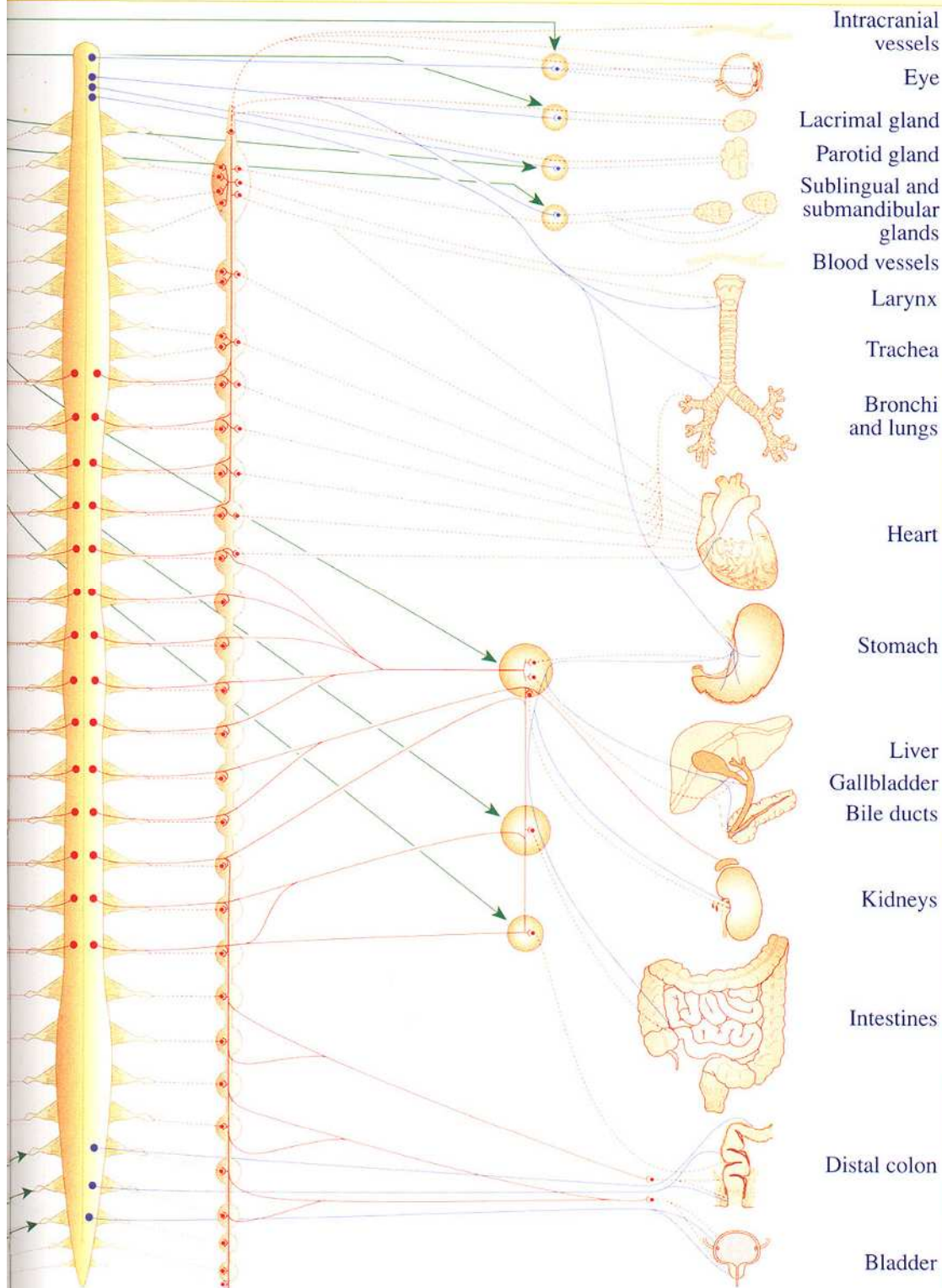


Figure 28 shows 36 autonomic ganglia on each side of the spinal cord with some of the tissues and organs to which they connect. The expressions of the physiology related to these organs are channelled through these ganglia, corresponding to the 36 books of Shikshā.

8. KALPA: Limbic System

Kalpa represents the principle of **transformation**—transformation of point values into expanded values, taking into consideration the totality of expressions. It has a predominantly Devatā value. There are four main divisions of Kalpa: Shrauta Sūtram, Gṛihya Sūtram, Dharma Sūtram, and Kalpa Sūtram; and three subordinate divisions: Kaushika Sūtram, Vaitāna Sūtram, and Shulba Sūtram. There are a total of 40 books within these divisions and each of them has a specific function and a specific number of books. There are 19 books in Shrauta Sūtram, 12 in Gṛihya Sūtram, eight in Shulba Sūtram, and one in Dharma Sūtram.

Limbic System

In the physiology, Kalpa is represented by the structures that process and transform any specific, or point value, of expression into a response that takes into consideration the totality of physiological expressions. These structures process any expression or experience with regard to its emotional meaning and its significance with respect to the inner and outer requirements of the physiology. The limbic system plays the role of **transforming** any point value of expression into an expanded response which generates an adaptive adjustment of the physiology to maintain overall balance and homeostasis.

There are four major divisions of the limbic system with approximately 40 components, corresponding in structure and function to the divisions and books of Kalpa. The four divisions in the limbic system include: the subcortical structures with about 19 components, which correspond to Shrauta Sūtram; the archicortex with 12 divisions, which correspond to Gṛihya Sūtram; the mesocortex with eight divisions, which correspond to Shulba Sūtram; and the paleocortex corresponding to Dharma Sūtram. Associated structures, such as the orbito-frontal cortex and other neocortical structures, also participate in the limbic system. They correspond to the other subordinate divisions of Kalpa (see Figure 29).

KALPA: Limbic System The Four Divisions of Kalpa and their Subdivisions

Archicortex	गृह्यसूत्रम्	Grihya Sūtram
Fimbria	आश्वलायन	Āshvalāyana
Prosubiculum	शांखायन	Shāṅkhāyana
Subiculum	गोभिल	Gobhila
Presubiculum	खादिर	Khādira
Parahippocampal gyrus	पितृमेव	Pitrimedha
Hippocampal gyrus	जैमिनी	Jaimini
Dentate gyrus	द्राह्यायण	Drāhyāyaṇa
Alveus	पाराशर	Pārashara
Fasciolar gyrus	तैत्तिरीय	Taittiriya
Entorhinal cortex	कठ	Katha
Prorhinal cortex	मानव	Mānava
Periamygdaloid cortex	वराह	Varāha

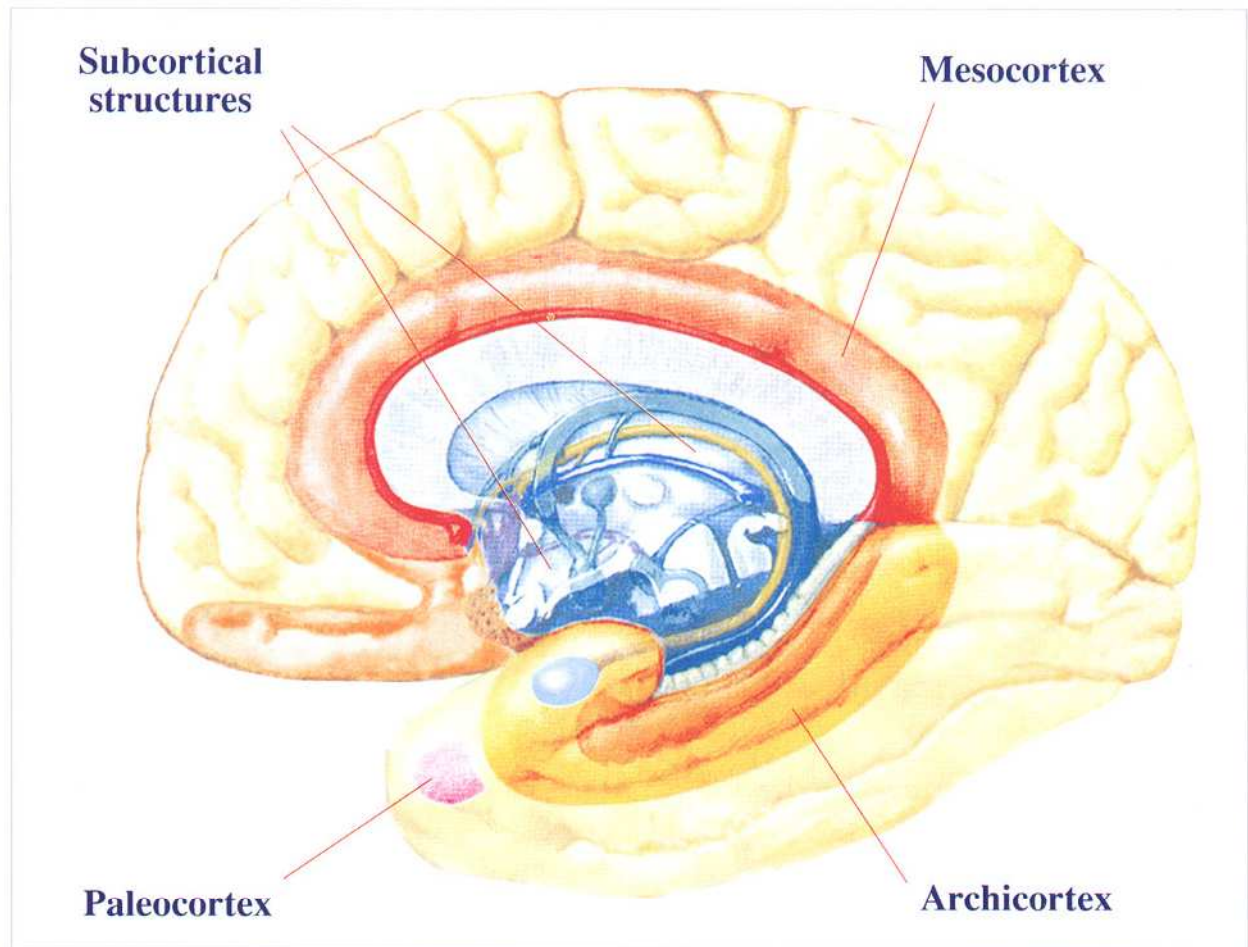


Figure 29 shows the limbic system with its 4 parts and divisions. They correspond to the 4 parts of Kalpa and their subdivisions as detailed in the tables.

KALPA: Limbic System The Four Divisions of Kalpa and their Subdivisions (cont.)

Subcortical Structures	श्रौतसूत्रम्	Shrauta Sūtram
Mammillary Body	आश्वलायन	Āshvalāyana
Diagonal Band	शांखायन	Shāṅkhyāna
Amygdaloid Complex	माशक	Māshaka
Medial septal nuclei	अनुपाद	Anupāda
Lateral septal nuclei	जैमिनी	Jaimini
Anterior Commissure	लाट्यायन	Lātyāyana
Medial Forebrain Bundle	द्राह्यायण	Drāhyāyana
Anterior Nucleus of Thalamus	वसिष्ठसूत्रम्	Vashishtha Sūtra
Stria Medullaris	पुष्प	Pusha
Habenular Nucleus	निदान	Nidān
Longitudinal Striae (Indusium Griseum)	वाराह	Vārāha
Stria Terminalis	कात्यायन	Kātyāyan
Interpeduncular Nuclei	वैखानस	Vaikhānasa
Mammillothalamic Tract	मानव	Mānava
Substania Innominata	कठ	Katha
Fornix	हिरण्यकेशिन्	Hiranyakeshiya
Medial Dorsal Nucleus of Thalamus	आपस्तम्ब	Āpastamba
Lateral Dorsal Nucleus of Thalamus	भारद्वाज	Bhāradvāja
Hypothalamic Nuclei	बौधायन	Baudhāyana

Mesocortex and some neocortical structures	शुल्बसूत्रम्	Shulba Sūtram
Subcallosal gyrus	आपस्तम्ब	Āpastamba
Paraterminal gyrus	बौधायन	Baudhāyana
Cingulate gyrus	सत्याषाढ	Satyāshādha
Orbito-frontal gyrus 1	हिरण्यकेशिन्	Hiranyāksha
Orbito-frontal gyrus 2	भारद्वाज	Bhāradvāja
Orbito-frontal gyrus 3	नक्षत्र	Nakshatra
Gyrus rectus	आङ्गिरस	Āngirasa
Anterior perforated substance	शान्ति	Shānti

Paleocortex	धर्मसूत्रम्	Dharma Sūtram
Pyramidal cortex of parahippocampal gyrus	शंख	Shamkh

9. VYĀKARAṆA: Hypothalamus

Vyākaraṇa represents the expanded and **expanding**, diversified and diversifying, quality of self-referral consciousness. It has a predominantly Chhandas quality. Vyākaraṇa is also described as grammar (see Figure 35). There is one book of Vyākaraṇa, with eight chapters of four divisions each, adding up to 32 divisions.

The Hypothalamus

In the physiology, Vyākaraṇa is represented by the hypothalamus. The hypothalamus releases factors that activate the pituitary gland, neurohypophysis, and autonomic nervous system. These releasing factors represent the **expansion** fundamental to the process of evolution of the endocrine and autonomic response, which leads to a large number of biochemical and physiological responses that bring the system to a new state of balance. The hypothalamus has eight regions with four nuclei each—32 nuclei in total—which correspond to the eight chapters of Vyākaraṇa and its 32 divisions (see Figures 30-35).

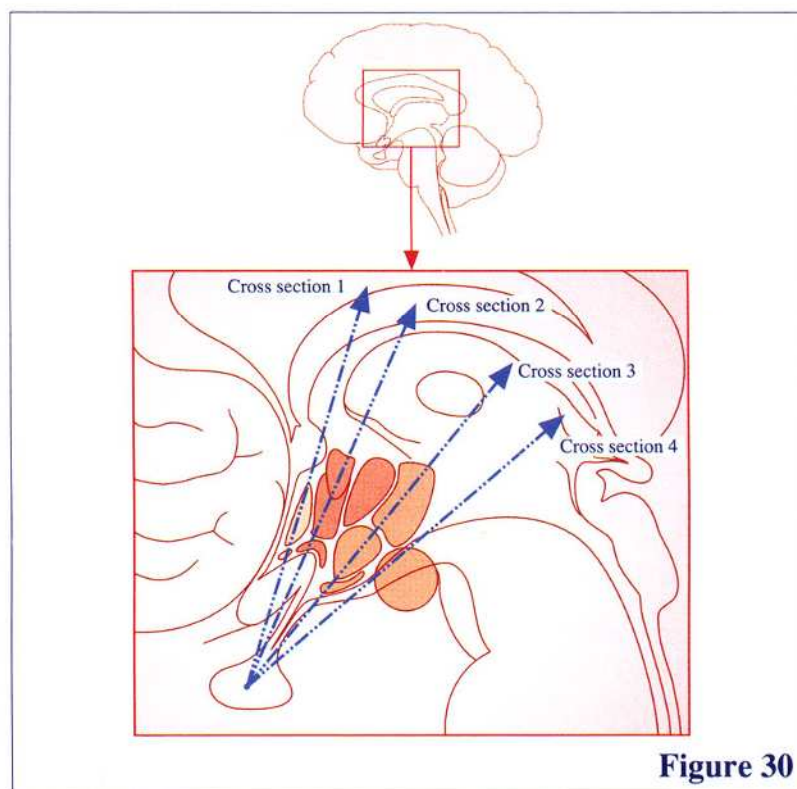
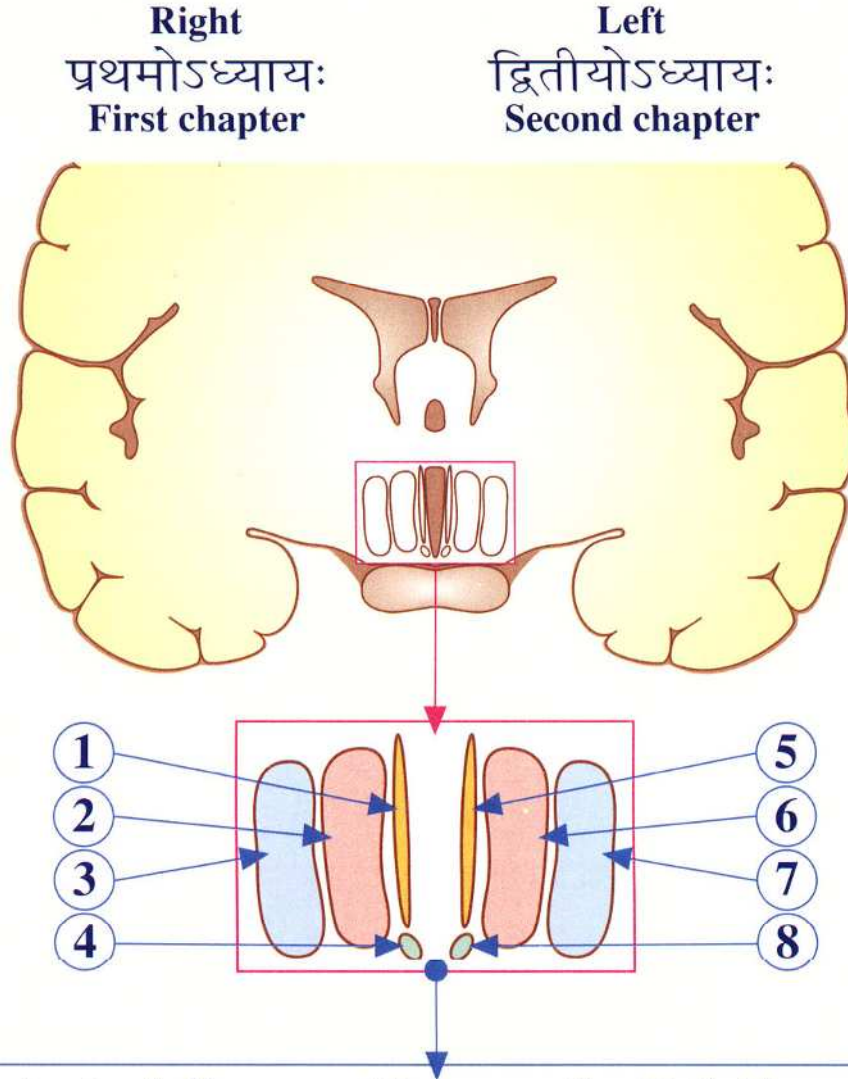


Figure 30

Figure 30 shows a schematic midline section of the hypothalamus. The hypothalamus has eight areas: anterior (right and left), middle (right and left), posterior (right and left), and lateral (right and left). This figure shows the hypothalamus with its anterior, middle, and posterior areas. (The lateral areas could not be conveniently shown on this simplified two-dimensional drawing.) The details of the 8 areas are shown in Figures 31-34.

VYĀKARAṆA: Hypothalamus

Cross Section 1 Anterior Area



Anatomic Names and Corresponding Vedic Names

Right nuclei

1. Preoptic periventricular
१ वृद्धिरादैच् ।
2. Medial preoptic
१ गौड्कुटादिभ्योऽञ्जिन् षिट् ।
3. Lateral preoptic
१ भूवादयो धातवः ।
4. Suprachiasmatic
१ आ कडारादेका संज्ञा ।

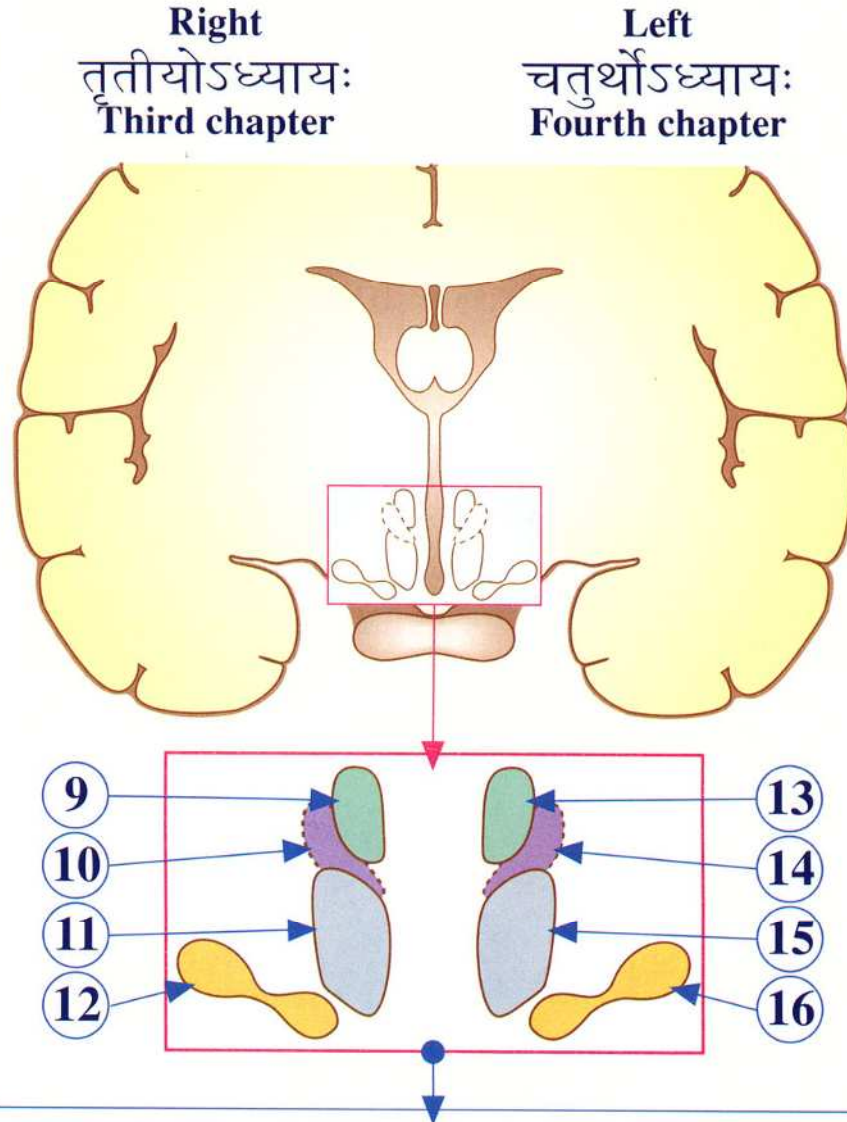
Left nuclei

5. Preoptic periventricular
१ समर्थः पदविधिः ।
6. Medial preoptic
१ पूर्वापराधरोत्तरमेकदेशिनैकाधिकरणे ।
7. Lateral preoptic
१ अनभिहिते ।
8. Suprachiasmatic
१ द्विगुरेकवचनम् ।

Figure 31 shows a cross section of the cerebral cortex and a highlight of the anterior hypothalamic areas, corresponding to the first and second chapters of Vyākaraṇa. The four nuclei in each area correspond to the four divisions of each chapter as described in the accompanying table.

VYĀKARANA: Hypothalamus

Cross Section 2 Middle Area



Anatomic Names and Corresponding Vedic Names

Right nuclei

- 9. Paraventricular**
१ प्रत्ययः ।
- 10. Dorsomedial**
१ कर्मस्यर्ण ।
- 11. Anterior hypothalamic**
१ उणादयो बहुलम् ।
- 12. Supraoptic**
१ धातुसम्बन्धे प्रत्ययाः ।

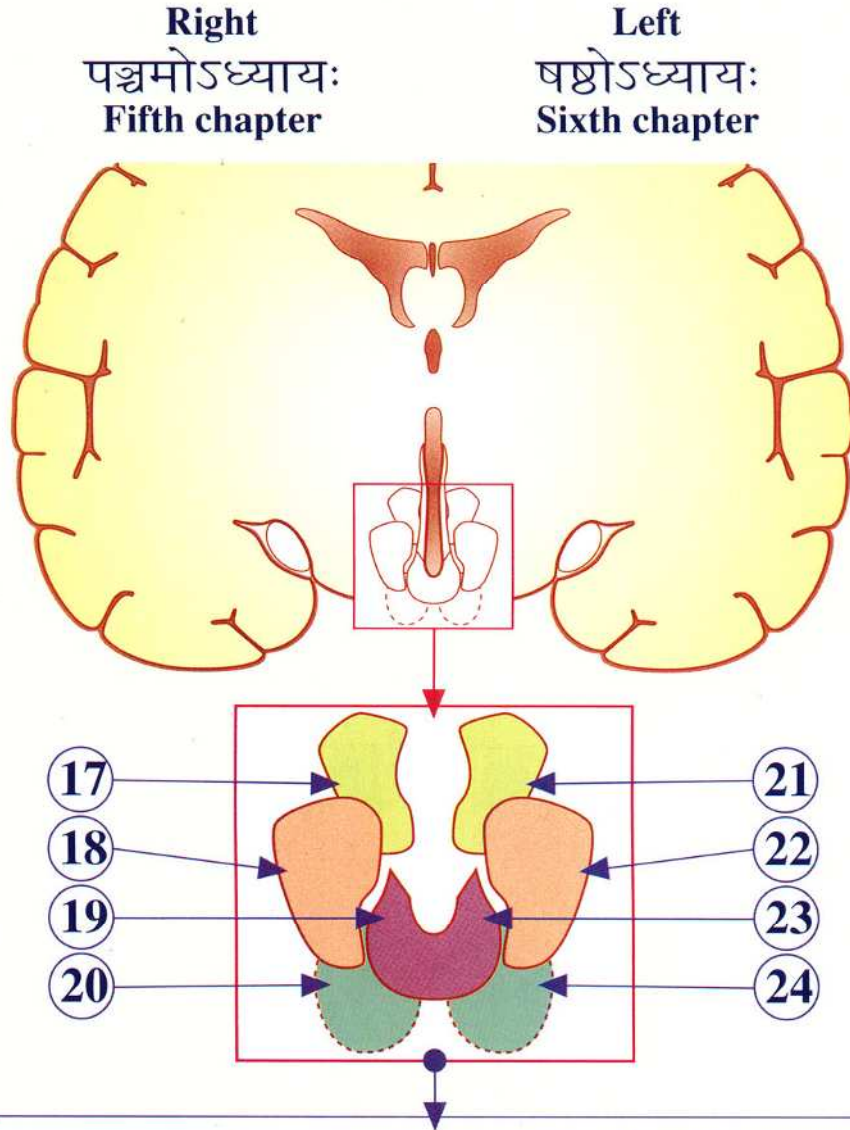
Left nuclei

- 13. Paraventricular**
१ ड्याप्रातिपदिकात् ।
- 14. Dorsomedial**
१ तेन रक्तं रागात् ।
- 15. Anterior hypothalamic**
१ युष्मदस्मदोरन्यतरस्यां खञ् च ।
- 16. Supraoptic**
१ प्राग्वहतेष्टक् ।

Figure 32 shows a cross section of the cerebral cortex highlighting the middle hypothalamic areas, which correspond to the third and fourth chapters of Vyākaraṇa. The four nuclei in each area correspond to the four divisions of each chapter as described in the accompanying table.

VYĀKARAṆA: Hypothalamus

Cross Section 3 Posterior Area



Anatomic Names and Corresponding Vedic Names

Right nuclei

- 17. Posterior hypothalamic**
१ प्राक् क्रीताच्छः ।
- 18. Ventromedial**
१ धान्यानां भवने क्षेत्रे खञ् ।
- 19. Arcuate**
१ प्राग् दिशो विभक्तिः ।
- 20. Mammillary**
१ पादशतस्य सङ्ख्यादेवी ।

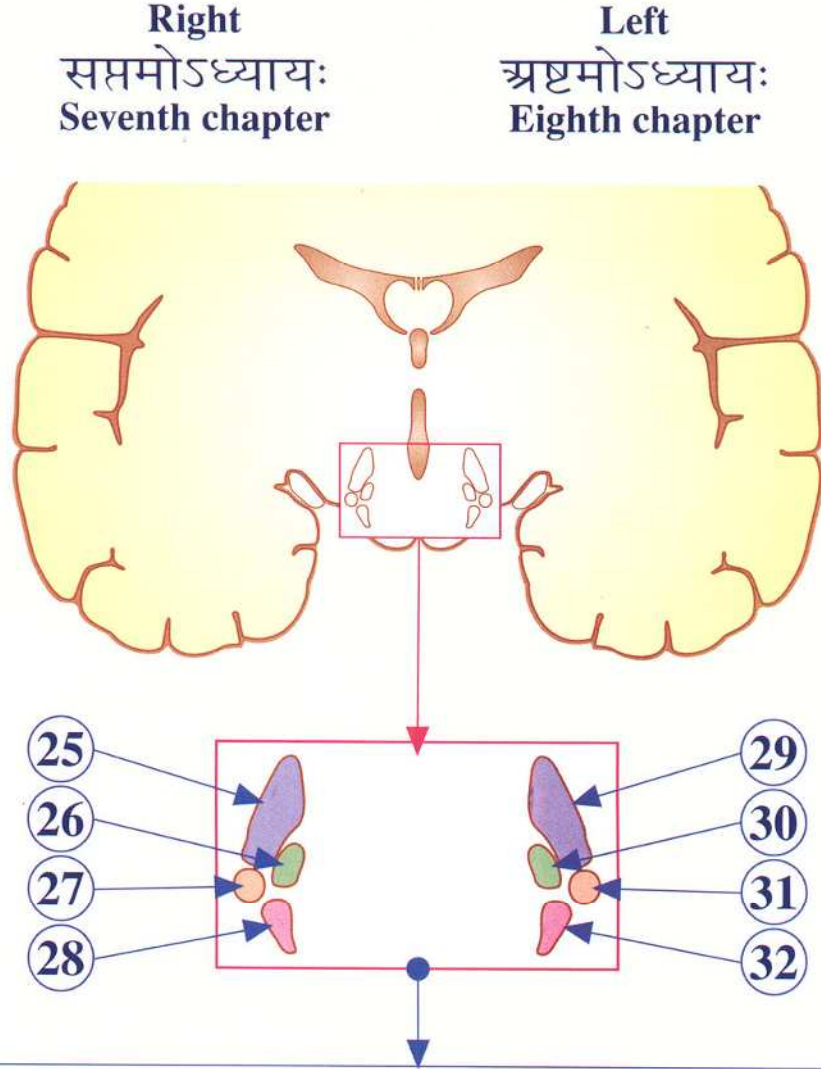
Left nuclei

- 21. Posterior hypothalamic**
१ एकाचो द्वे प्रथमस्य ।
- 22. Ventromedial**
१ बहुव्रीहौ प्रकृत्या पूर्वपदम् ।
- 23. Arcuate**
१ अलुगुत्तरपदे ।
- 24. Mammillary**
१ अङ्गस्य ।

Figure 33 shows a cross section of the cerebral cortex highlighting the posterior hypothalamic areas, which correspond to the fifth and sixth chapters of Vyākaraṇa. The four nuclei in each area correspond to the four divisions of each chapter as described in the accompanying table.

VYĀKARAṆA: Hypothalamus

Cross Section 4 Lateral Area



Anatomic Names and Corresponding Vedic Names

Right nuclei

25. Lateral hypothalamic
१ युवोरनाकौ ।
26. Intercalatus
१ सिचि वृद्धिः परस्मैपदेषु ।
27. Tuberal
१ देविकाशिशपादित्यवाइदीर्घसत्रश्रेयसामात् ।
28. Lateral mammillary
१ शौ चङयुपधाया ह्रस्वः ।

Left nuclei

29. Lateral hypothalamic
१ सर्वस्य द्वे ।
30. Intercalatus
१ पूर्वत्रासिद्धम् ।
31. Tuberal
१ मतुवसो रु सम्बुद्धौ छन्दसि ।
32. Lateral mammillary
१ रषाभ्यां नो णः समानपदे ।

Figure 34 shows a cross section of the cerebral cortex highlighting the lateral hypothalamic areas, which correspond to the seventh and eighth chapters of Vyākaraṇa. The four nuclei in each area correspond to the four divisions of each chapter as described in the accompanying table.

VYĀKARAṆA: Hypothalamus Grammar in the Physiology

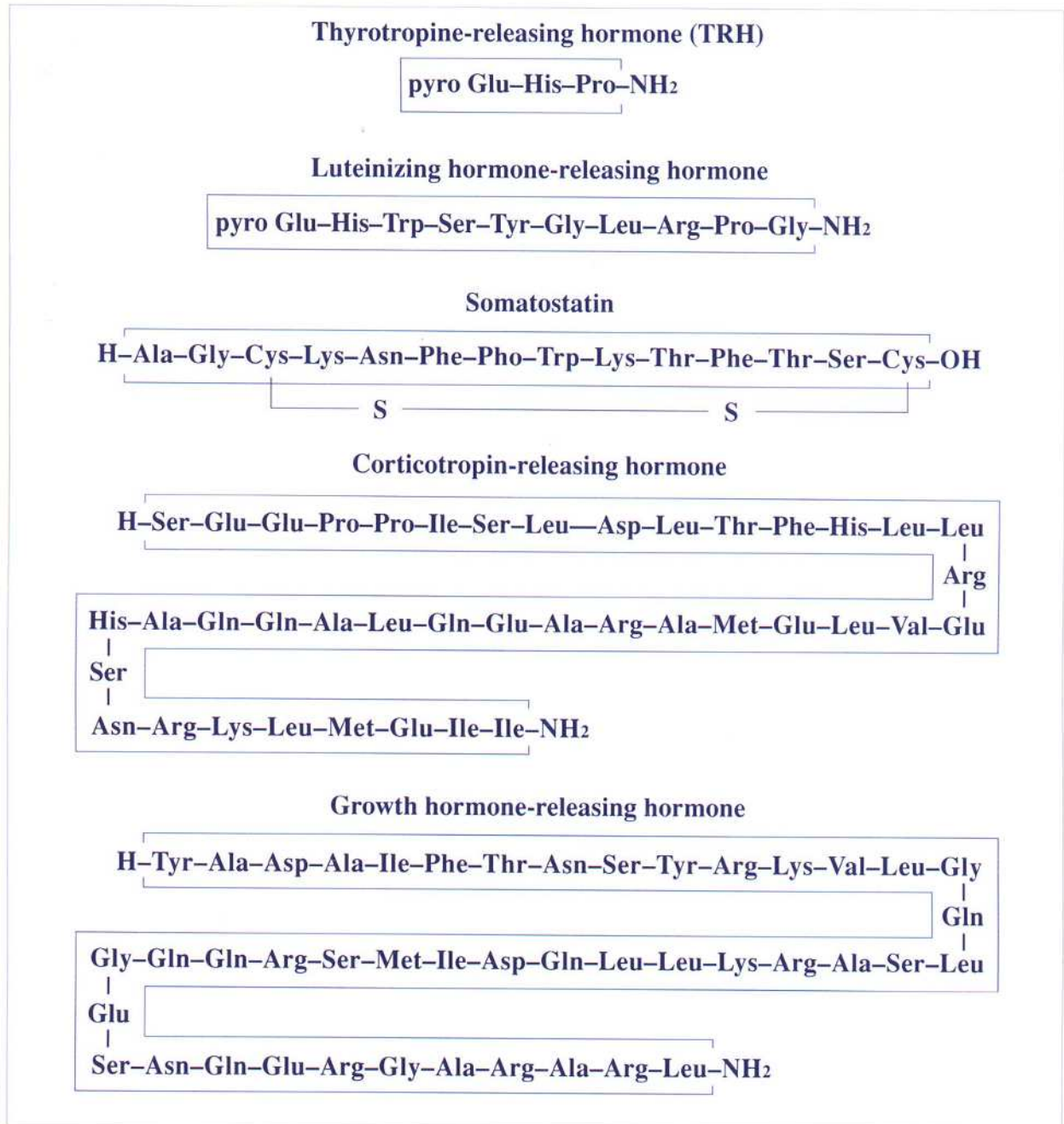


Figure 35: In its role as grammar, Vyākaraṇa gives the rules of how to assemble syllables and groups of syllables into meaningful words and sentences. Different ‘punctuations’ in a string of syllables give different meanings to the same sequence of sounds.

Similarly, the hypothalamic nuclei produce long strings of amino acids and chop them off at different places, yielding smaller strings which act as neurotransmitters or neurohormones. These strings of amino acids become messengers with specific influences on the physiology. The exact sequence and length of the amino acids are the key determinants of the specificity and meaning of these messengers, just as proper sequences of words give meaningful sentences.

10. NIRUKTA: Pituitary Gland

Nirukta represents the quality of **self-referral** consciousness, which maintains connectedness with the source as the expanding quality of consciousness progresses in steps of expansion. It has a predominantly Chhandas quality. There is one book of Nirukta with 13 chapters.

*Pituitary Gland
and Autonomic
Nervous System*

In the physiology, Nirukta is represented by the pituitary gland, the neurohypophysis, and the sympathetic and parasympathetic systems. These are activated by the limbic system and the hypothalamic releasing factors. They expand the response and bring it back towards the organs and organ systems of the physiology through a feedback loop that maintains homeostatic balance. There are 13 factors involved in this **self-referral** expansion, corresponding to the 13 chapters of Nirukta:

- | | |
|----------------------------------|------------------------------------|
| 1. Sympathetic system | 8. Luteinizing hormone |
| 2. Parasympathetic system | 9. Prolactin |
| 3. Oxytocin | 10. β -endorphin |
| 4. Vasopressin | 11. Growth hormone |
| 5. Thyrotropin | 12. β -lypotropin |
| 6. Adrenocorticotropin | 13. Melanocyte stimulating hormone |
| 7. Folliculo stimulating hormone | |

	Physiological Factor	Nirukta (13 chapters)
1	Adrenergic factor (Sympathetic system)	अध्याय १ Chapter 1
2	Cholinergic factor (Parasympathetic system)	अध्याय २ Chapter 2
3	Oxytocin	अध्याय ३ Chapter 3
4	Vasopressin	अध्याय ४ Chapter 4
5	Thyrotropin (TSH)	अध्याय ५ Chapter 5
6	Adrenocorticotropin (ACTH)	अध्याय ६ Chapter 6
7	Folliculo-stimulating hormone (FSH)	अध्याय ७ Chapter 7
8	Luteinizing hormone (LH)	अध्याय ८ Chapter 8
9	Prolactin	अध्याय ९ Chapter 9
10	β -endorphin	अध्याय १० Chapter 10
11	Growth Hormone (GH)	अध्याय ११ Chapter 11
12	β -lypotropin	अध्याय १२ Chapter 12
13	Melanocyte stimulating hormone (MSH)	अध्याय १३ Chapter 13

Pituitary Gland

Response Factors

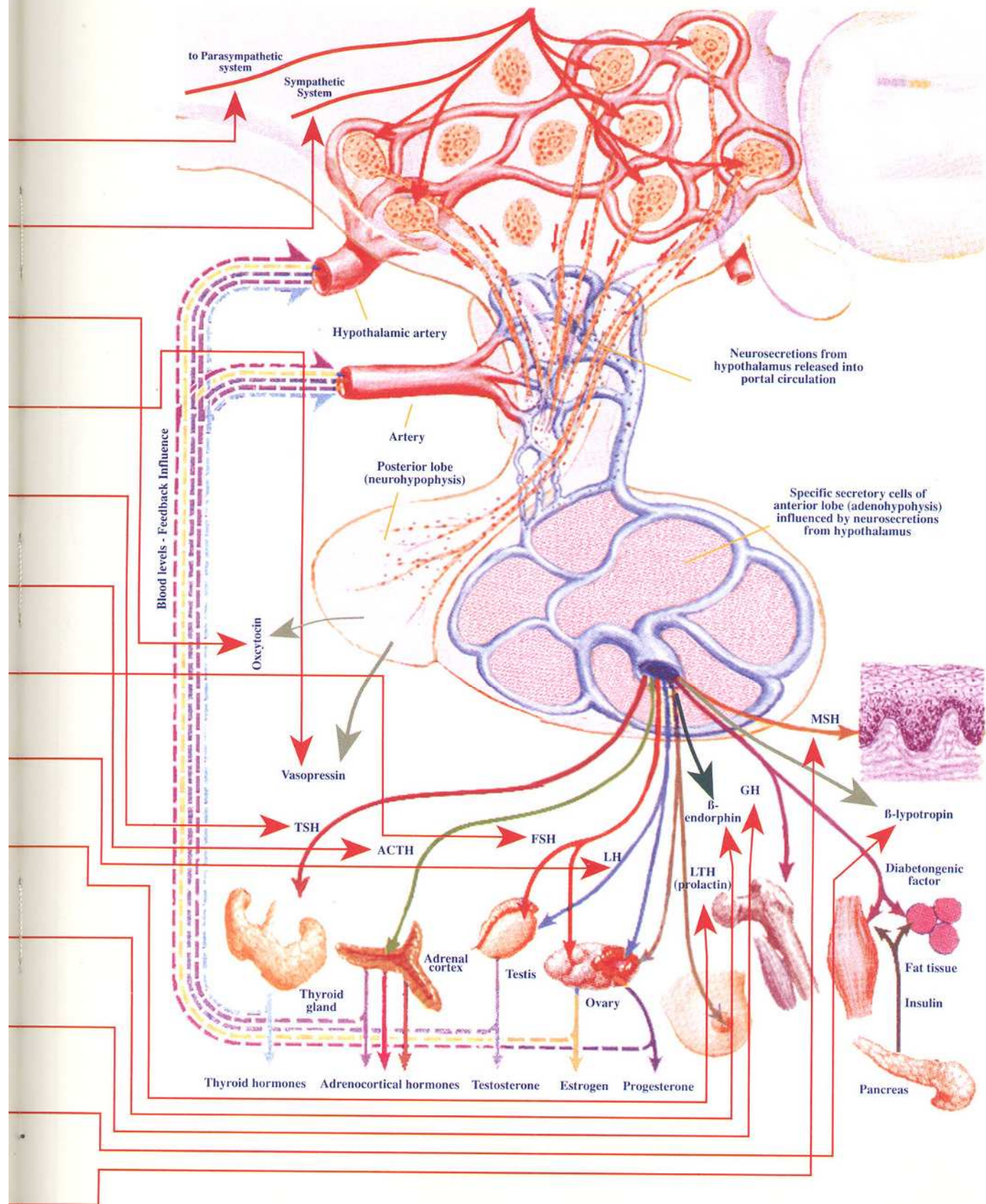


Figure 36 shows the pituitary gland as it is activated by the hypothalamus. The 13 factors involved in the response to the hypothalamus are listed. They correspond to the 13 chapters of Nirukta.

11. CHHANDA: Neurotransmitters and Neurohormones

Chhanda represents the covering and uncovering, hiding quality of self-referral consciousness. This value also is a transforming value; it tunes a previously set situation to a new value as it brings back the information on the way to the source; as such, it has a **measuring**, adjusting quality with a predominantly Devatā value. It describes the metres used in the Vedic Literature. There is one book of Chhanda with eight chapters.

*Neuro-
Transmitters,
Neurohormones,
and Hormones*

In the physiology, Chhanda is found within the feedback loops of the hypothalamic-pituitary axis and sensory-motor systems (see Figure 37). These are the resetting mechanisms that maintain proper balance within the range of transformation anticipated or ordained by the body. In a way, these maintain the proper rhythm, or metre. They cover a previously expressed situation and allow a new situation to be uncovered. They therefore play the role of a transforming, a predominantly Devatā quality, even though they have an inherent covering and uncovering quality, associated with the name Chhanda. This role is played by the various neurotransmitters, neurohormones, and hormones. There are 24 significant ones with 100 or more possible varieties. They correspond to the number of metres in Chhanda—24 in Rk Veda and about 100 different metres in the whole of the Vedic Literature. The eight chapters of Chhanda correspond to the eight organ systems as listed below.

Organ systems 8 Chapters of Chhanda (summarized in 8 categories)

- | | |
|-------------------------------------|--|
| 1. Gastrointestinal-excretory | 1st Sūtra of the 1st chapter
..... धीश्रीस्त्री म् ११-१। |
| 2. Pulmonary | 1st Sūtra of the 2nd chapter
..... छन्दः १२-१। |
| 3. Haematologic-immunologic | 1st Sūtra of the 3rd chapter
..... पादः १३-१। |
| 4. Neurological | 1st Sūtra of the 4th chapter
..... चतुःशतमुत्कृतिः १४-१। |
| 5. Cardio-vascular | 1st Sūtra of the 5th chapter
..... वृत्तम् १५-१। |
| 6. Musculo-skeletal | 1st Sūtra of the 6th chapter
..... यतिर्विच्छेदः १६-१। |
| 7. Endocrine-reproductive | 1st Sūtra of the 7th chapter
..... प्रहर्षिणी मूनौ जरौ ग् त्रिकदशकौ १७-१। |
| 8. Dermatologic | 1st Sūtra of the 8th chapter
..... अत्रानुक्तं गाथा १८-१। |

CHHANDA: Neurotransmitters and Neurohormones

1. Gastrointestinal-excretory

2. Pulmonary

8. Dermatologic

Four types of neurotransmitters

Exogenous agonist	Reversible antagonist	Irreversible antagonist	Endogenous agonist
●	▼	◆	▼▼

Two types of receptors

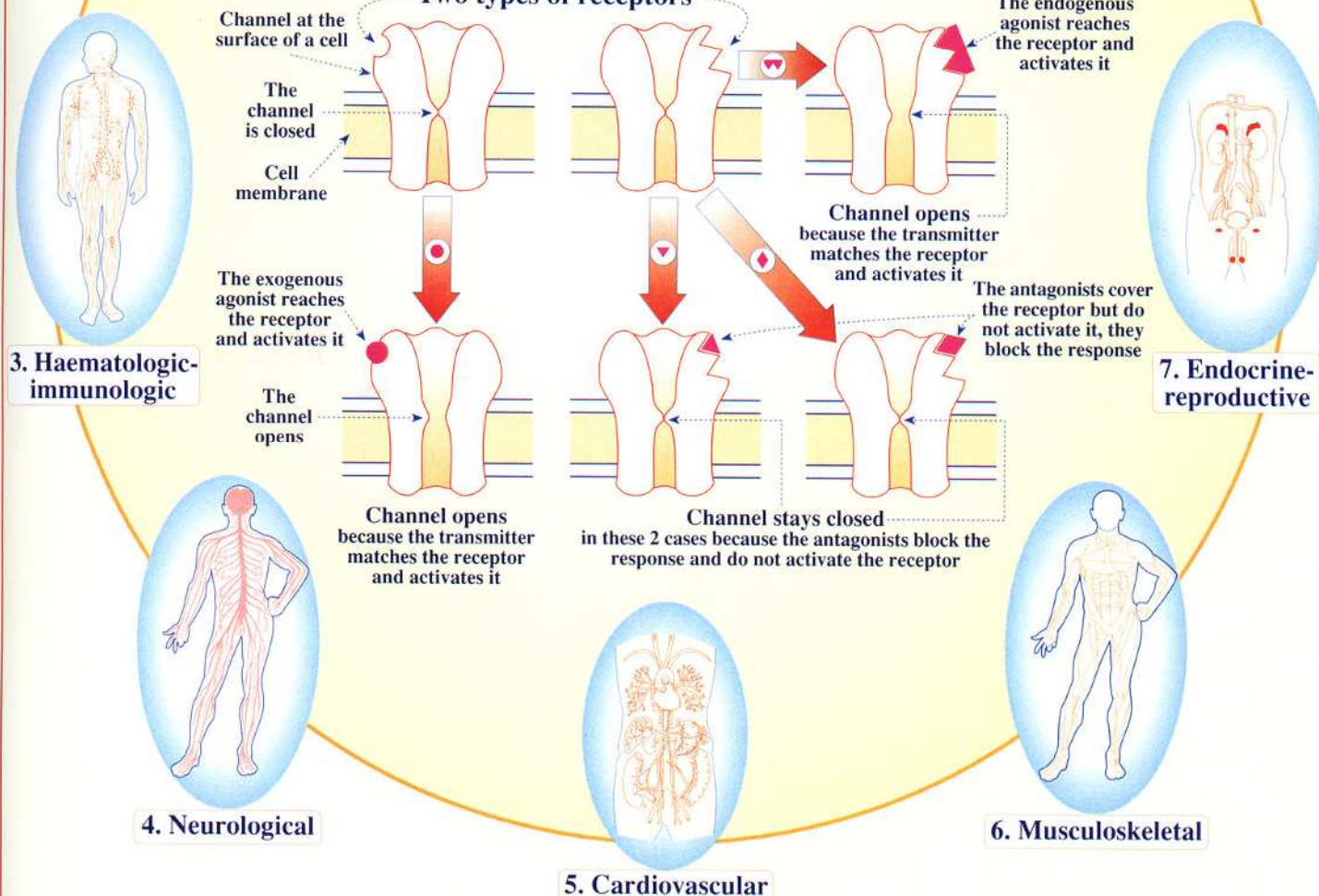


Figure 37 shows how transmitters activate receptors and lead to a transformation at the end-organ level (eight organ systems displayed on the outside of the illustration). The transmitter operates like a key that fits into a specific lock and allows the opening of the door. The receptor is the lock, and the response, as seen in this chart, is the opening of a channel (like opening a door).

In this manner, Chhanda has a value of transformation (opening or closing a channel); in addition the term Chhanda refers to the hiding quality (the transmitter covers the receptor). The receptors are located on the surface of the cells in the organ systems, summarized here in eight categories that correspond to the eight chapters of Chhanda.

12. JYOTISH:

Brain Ganglia and Brain Stem

Jyotish represents the all-knowing quality of self-referral consciousness. It is that value which sees the past, connects with the present, and foresees the future. This is a predominantly Rishi quality. Jyotish is the science of prediction, based on mathematical calculations involving the following factors:

1. Nine Grahas:
 - (1) Sūrya (self, king, status, father)
 - (2) Chandra (mind, emotions, queen, mother)
 - (3) Maṅgala (courage, precision, general)
 - (4) Budha (intellect, discrimination)
 - (5) Guru (wisdom, expansion, teacher)
 - (6) Shukra (luxury, pleasures, arts)
 - (7) Shani (grief, obstructions, servant)
 - (8) Rāhu (unpredictable, similar to Shani)
 - (9) Ketu (secretive, occult, similar to Maṅgala)

In Vedic astronomy, the Grahas are related to Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn, and the two lunar nodes.

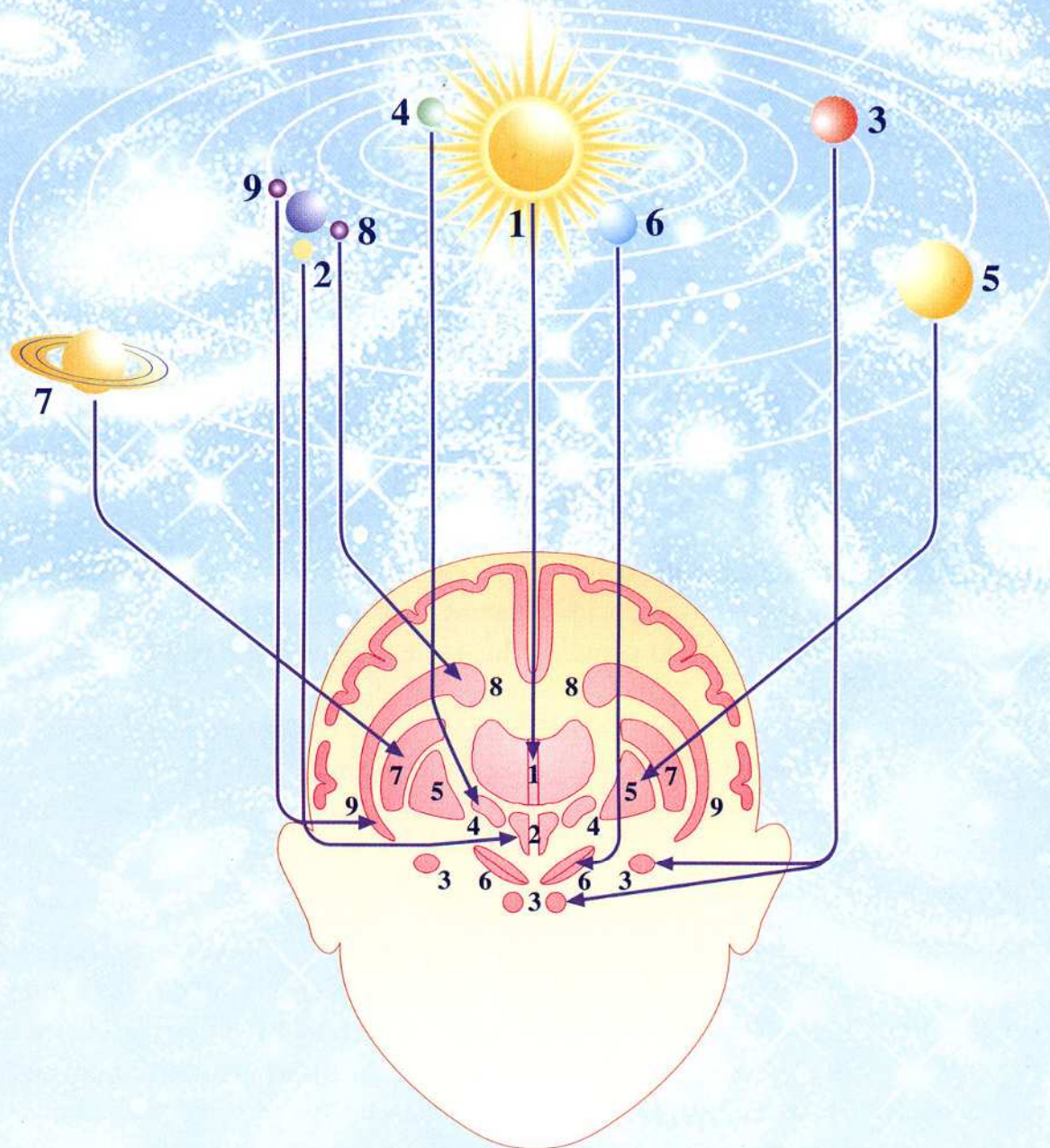
2. The 27 Nakshatras are related to the rhythms of Nature. They help describe the phases of individual life when considered with respect to Chandra's position at the time of birth. In Vedic astronomy these correspond to various groups of stars.
3. The 12 Bhāvas represent specific aspects of the human physiology, psychology, and life matters such as wealth, education, profession, marriage, etc.
4. The 12 Rāshis are the 12 principles describing specific characteristics and potentialities of individual life. In Vedic astronomy, the Rāshis have been correlated to the 12 signs of the zodiac—Aries, Taurus, Gemini, etc.

The Nine Grahas in the Physiology

Sūrya:
Thalamus

The thalamus occupies a major and central place in the brain, and is a structure to which all the basal ganglia and sensory and motor inputs connect. It acts like Sūrya, the sun, around which all activity is centred. The thalamus computes the holistic characteristics of all the expressions of the Self. It is like the king of the basal ganglia, for it is through the thalamus that all is ordained and controlled. An anatomical structure of fibres form a crown around it, the corona radiata or 'radial crown'. It is like a royal crown. These qualities are described by Pārāshara as being of Sūrya—the Sun.

JYOTISH: The Basal Ganglia and the 9 Grahas



① • Sūrya or Sun ① • Thalamus	④ • Budha or Mercury ④ • Subthalamus	⑦ • Shani or Saturn ⑦ • Putamen
② • Chandra or Moon ② • Hypothalamus	⑤ • Guru or Jupiter ⑤ • Globus Pallidus	⑧ • Rāhu or Ascending Lunar Node ⑧ • Nucleus Caudatus, head
③ • Mangal or Mars ③ • Red Nucleus, Amygdala	⑥ • Shukra or Venus ⑥ • Substantia Nigra	⑨ • Ketu or Descending Lunar Node ⑨ • Nucleus Caudatus, tail

Figure 38 shows a coronal section of the brain with its internal structures including the basal ganglia, the thalamus, the hypothalamus, the subthalamus. etc. and their one-to-one relation to the 9 planets or Grahas of the solar system.

*Chandra:
Hypothalamus*

The hypothalamus, situated under the thalamus, also occupies a prominent place in the centre of the brain. It is involved with emotions and the physiological response to emotions. It has daily, monthly, and seasonal cycles. It controls feeding behaviour, body temperature, reproductive behaviour, and hormonal cycles of various frequencies (e.g., women's 28-day cycle). It is like a mother or a queen. Its function and characteristics are like those described for Chandra (Moon) in Jyotish.

*Shani:
Putamen*

The farthest 'satellite' from the thalamus (Sun) sits at the outer edge of the basal ganglia. It is a large structure, which looks dark in sections of the brain. This is the putamen. Its function is like that of a servant; it receives the major orders and inputs that are transmitted to the basal ganglia. The putamen is primarily concerned with motor activity. It can restrict and obstruct the input to the basal ganglia. Its disruption or affliction leads to progressive disease (see also Rāhu below), decreased tone in the body, dementia, chorea (abrupt uncoordinated movements of the limbs and facial muscles), and early death. Its function and structure make it identical to Shani (Saturn), as described in Jyotish.

*Guru:
Globus
Pallidus*

Second from the outer edge of the basal ganglia, after the putamen (Shani), lies a globular structure, which constitutes the major output of the basal ganglia. This is the globus pallidus. It acts as the major instructor or teacher, which produces the most balanced, all-embracing instructions to guide action. It is involved in higher-order control: planning and execution of complex strategies as well as functions related to the limbic system, including maintenance of inner balance and action in accordance with inner and outer demands (action in tune with Natural Law). These values of the globus pallidus make it identical to Guru (Jupiter) in Jyotish.

*Maṅgala:
Red Nucleus,
Pars Compacta,
and Amygdala*

Moving more centrally towards the thalamus (Sūrya), after the globus pallidus (Guru), comes the pars compacta of the substantia nigra. This is a compact structure, which looks red on cut sections of the brain. It both activates and inhibits the putamen (Shani) and caudate nuclei (Rāhu and Ketu). The pars compacta and the red nucleus are involved in the maintenance of steadiness and precision of movement. They are like a general, keeping under check structures related to control of movement. Their disruption or affliction leads to tremors, rigidity, and difficulty or inability to initiate movement (akinesia), as if one has insecurity, fear, and lack of initiative. It represents Maṅgala (Mars)—precision, sharpness, courage—as described in Jyotish.

It may be noted also that the amygdala in its function and relation with the tail of the caudate (see Ketu later) could be considered as playing part of the role of Maṅgala. The emotion of fear is associated with the activity of the amygdala. Fear is one of the functions associated to Maṅgala.

JYOTISH: **Basal Ganglia and Brain Stem** **The 9 Grahas (II)**

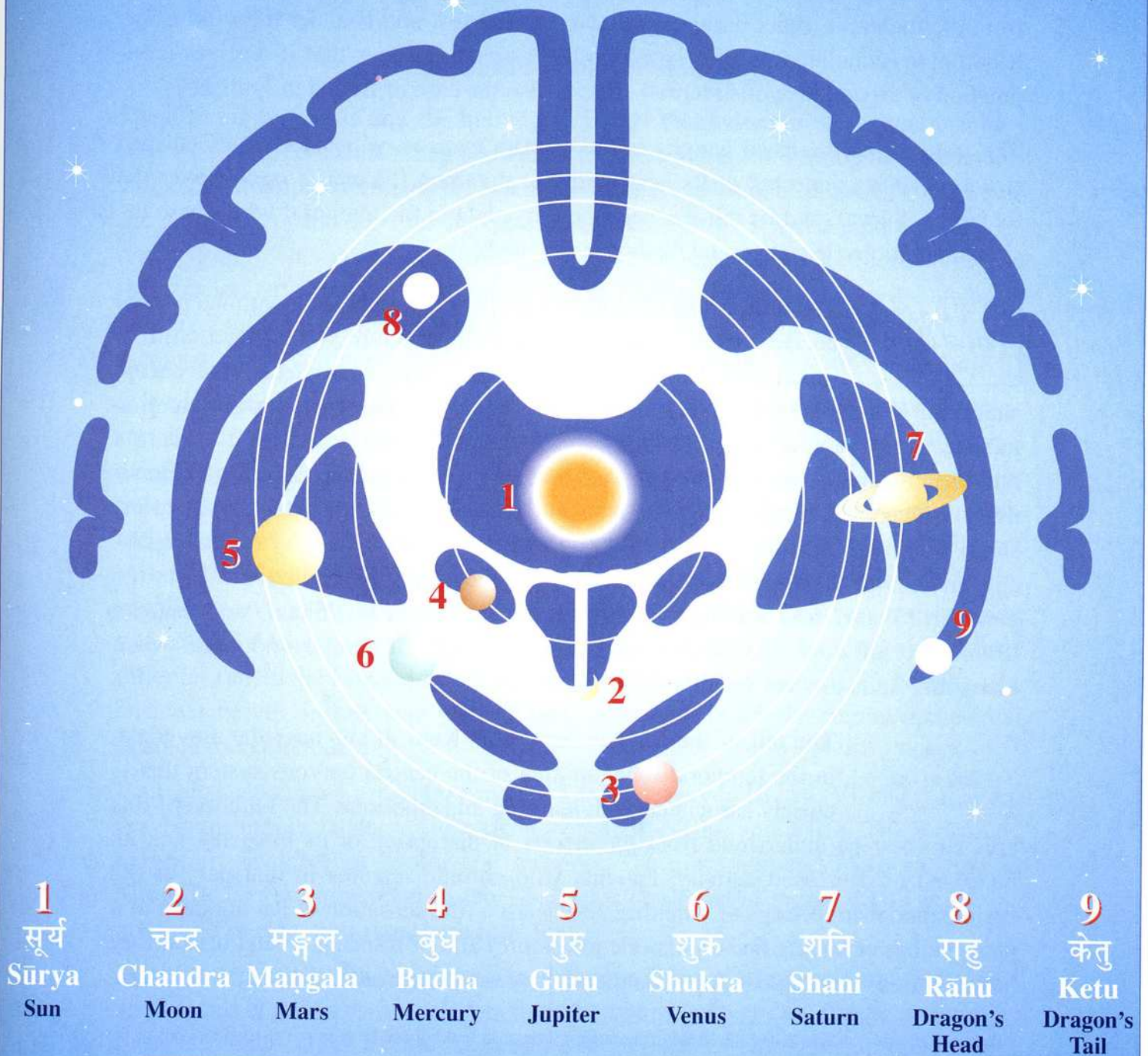


Figure 39 shows the 9 Grahas as they relate to the different parts of the basal ganglia, thalamus, and hypothalamus.

*Shukra:
Pars Reticulata*

The counterpart of the pars compacta is the pars reticulata. It is a finely reticulated pale structure, similar in structure and function to the globus pallidus (Guru), but with a much more limited impact, less global scope and connection. It is associated with control of action and with the limbic system (related to instincts, emotions, and reproductive behaviour). It represents Shukra (Venus), as described in Jyotish.

*Budha:
Sub-Thalamic
Nucleus*

The nearest 'satellite' to the thalamus is the sub-thalamic nucleus, which is similar to Budha (Mercury) around Sūrya (Sun). The functions of the sub-thalamic nucleus express the quality of discrimination, which is also a quality assigned to Budha in Jyotish. It receives inputs from the thalamus, other basal ganglia, and the cortex, and is under their influence. It can give modulated outputs based on the major influences that it receives (conjunction or aspect, in Jyotish terms). This is also the case of Budha in Jyotish.

The last part of the basal ganglia is the caudate nucleus, which forms a C-shaped structure. It is connected at its head with the putamen (Shani), it curves over the thalamus (Sūrya), and its tail lies near the amygdala in the temporal lobe where the seat of emotions, learning, and memory is located.

*Rāhu:
Head of the
Caudate*

The head of the caudate* corresponds to Rāhu. It is intimately connected with the putamen (Shani) in structure and in function. It is involved in the control of saccadic eye movements (the abrupt short shifts of focus in the eyes); in aspects of memory concerned with orientation in space; and in the ability to change behavioural sets. When afflicted, it leads to a range of disorders: absent-mindedness, irritability, depression, fidgeting, clumsiness, sudden falls, disturbance of speech, and distorted and grotesque facial expressions. Cognitive functions also deteriorate and eventually the ability to reason disappears. These disorders can also be encountered when the affliction affects the putamen (Shani), and are very marked when both putamen (Shani) and caudate (Rāhu) are afflicted. Jyotish describes the occurrence of similar anomalies when Shani and Rāhu are badly afflicted.

*Ketu:
Tail of the
Caudate*

The tail of the caudate represents Ketu. It sits near the amygdala, in the temporal lobe, an area of the central nervous system that is closely associated with learning and emotions. The function of this area can best be understood from the effects of disruption of its integrity, i.e., its increased or decreased activity. Patients with chronic seizures in that part of the brain experience feelings of unreality and déjà-vu (the sensation of having been in a place before or having had an experience before) and of transient visual or auditory hallucinations: feelings of depersonalization, fear or anger, delusions, and paranoia.

* Traditionally this node is called the 'head of the dragon'. Its head and tail can be seen in the head and tail of the caudate.

Most patients also can be intensely emotional, ardently religious, extremely moralistic, and lacking in humour. These symptoms are due to irritative lesions in the temporal lobe, near the tail of the caudate (Ketu). Destructive lesions bring about loss of function, with disturbance in the ability to comprehend the emotional content of language or difficulty in expressing emotions. Anxiety disorder, characterized by racing heart and shortness of breath, and sometimes accompanied by panic attacks, can also accompany disturbances in that part of the nervous system. Many of these are characteristics of Ketu; the anomalies described above can be found in Jyotish when Ketu is afflicted.

The Figures 38 and 39 shows the relationship of the nine Grahas with the corresponding brain structures.

The Rashis in the Physiology

The 12 cranial nerves and the brain stem nuclei that subserve their functions correspond to the 12 Rāshis. They contribute to create everyone's individual characteristics. For example, some people are predominantly emotional or intellectual, some use one sense or the other as their dominant feature (e.g., singers, painters, photographers, etc.) This dominance arises not from the cranial nerves themselves and their nuclei, but from their relationship to the Bhāvas through the activity, strength, and predominance of the Grahas and the combinations of relationships established among all these components of Jyotish in the central nervous system.

It is customary to consider that there are 12 cranial nerves which include the accessory nerve. This accessory nerve is not a typical cranial nerve. Most of its branches arise from the cervical area and join nerves in the cervical area to supply muscles outside the cranium. The other branches arise from the cranium but join immediately the nerve X and become part of it. Therefore, the accessory nerve should not be considered a cranial nerve. On the other hand, nerve VIII, which is the vestibulocochlear nerve, is by all means two separate nerves. These two nerves arise from two different locations. They travel to different nuclei in the brain stem and have different functions. One is for balance (the vestibular nerve), one is for hearing (the cochlear nerve). In this way we find that, indeed, there are 12 cranial nerves, but counted in a different way.

Four of these nerves are purely motor. They are nerves III, IV, VI and XII. Four nerves are purely sensory. They are nerves I, II, VIIIa, and VIIIb. The remaining nerves are dual nerves (motor and sensory). These are nerves V, VII, IX, and X. These 12 nerves correspond to the 12 Rāshis as shown in Figure 40. (The Rāshis are four movable, four fixed, and four dual.)

Furthermore, the 12 Rāshis are assigned to four different elements: air, fire, water, and earth. On the basis of their function, the cranial nerves can also be assigned to these elements—three for the air element, three for the water element, three for the fire element, and three for the earth element. In this way we find that the 12 cranial nerves correspond exactly to the 12 Rāshis.

JYOTISH: The Cranial Nerves and the 12 Rashis

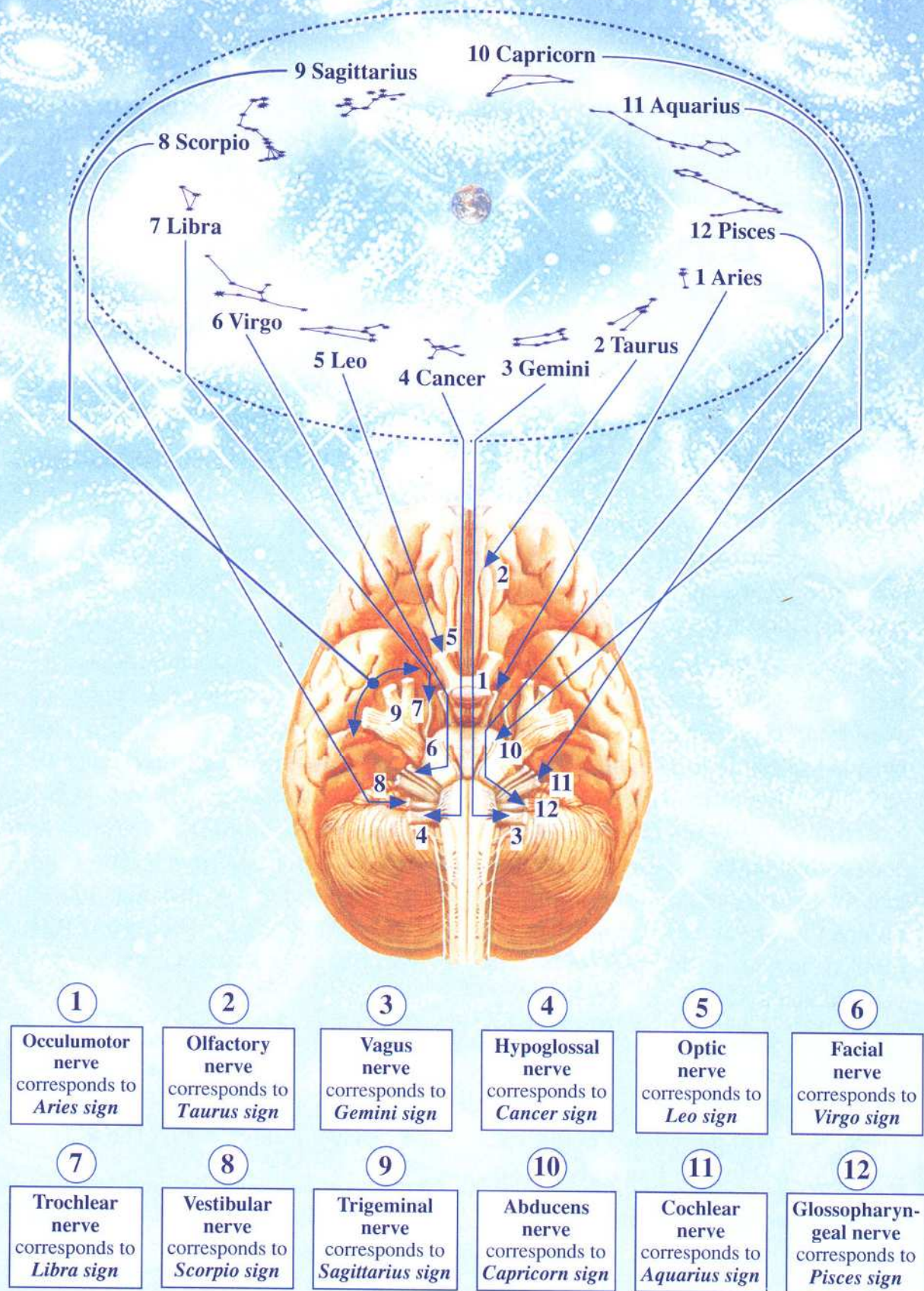


Figure 40 shows a ventral view of the brain with its 12 cranial nerves and their one-to-one relation to the 12 signs of the vedic zodiac called Rashis.

JYOTISH: The 12 Rāshis and the 12 Cranial Nerves

	Rāshi	Cranial Nerve	Explanation
1	Mesha movable – fire	Oculomotor	This nerve moves the eyes as well as the lens of the eyes (movable Rāshi). The eyes relate to sight, which is derived from the element of fire (Tejas).
2	Vrishabh fixed – earth	Olfactory	This nerve is for smell (fixed Rāshi). The sense of smell is derived from the element of earth (Prithivī).
3	Mithuna dual – air	Vagus	This nerve is both sensory and motor to the visual organ (dual). It controls visual movements and autonomic functions including airways and lungs. These are related to Vāta or Vāyu (air elements) in Jyotish.
4	Karka movable – water	Hypoglossal	This nerve moves the tongue (movable Rāshi). The sense of taste is derived from the element of water (Jala).
5	Simha fixed – fire	Optic	This nerve is for sight (fixed Rāshi). Sight is derived from the element of fire (Tejas).
6	Kanyā dual – earth	Facial	This nerve is for both sensory and motor (dual Rāshi). It controls facial expression. Kanyā is a ‘human Rāshi’ which is said to give the greatest beauty and relates to the earth element (Prithivī).
7	Tula movable – air	Trochlear	This nerve moves the eyes downward and outward. It supplies the muscle that passes through a trochlea (pulley) (movable Rāshi). Tula is represented by a balance around a pulley. It relates to the element of air (Vāyu).
8	Vrishchik fixed – water	Vestibularis	This nerve conveys the sense of balance detected through the fluid filled vestibular in the ear (fixed Rāshi). The element of water (Jala) always tries to achieve a state of balance. Vrishchik has water element.
9	Dhanu dual – fire	Trigeminal	This nerve controls both chewing as well as sensation from the face and teeth (dual Rāshi). The element of fire (Tejas) relates to digestion, which starts with chewing. The fire ‘devours’ whatever it burns, which is an allegory to the process of eating.
10	Makara movable – earth	Abducens	This nerve moves the eyes to the sides to expand the view and to look at far distance (movable Rāshi). The earth provides the horizon where the view can expand and reach infinity. Makara relates to the element of earth (Prithivī).
11	Kumbha fixed – air	Cochlear	This nerve is for hearing (fixed Rāshi). The sense of hearing is derived from the element of space (Ākāsha), which is closest to the element of this Rāshi, which is air (Vāyu).
12	Mina dual – water	Glosso-pharyngeal	This nerve is both motor and sensory (dual Rāshi). It conveys sensations from the mouth and pharynx including taste. The sense of taste is derived from the element of water (Jala). Also, swallowing is only possible if the substance is liquid to some extent, which relates to the water element.

Figure 41 lists the 12 Rāshis with their qualities (movable, fixed, or dual and earth, water, fire, or air) as described in Jyotish. Each Rāshi corresponds to one of the 12 cranial nerves also listed here next to their related Rāshis. A brief explanation of the relationship between each Rāshi and its corresponding cranial nerve is also given.

The 27 Nakshatras in the Physiology

The 27 Nakshatras are like constellations of neurons, involved in the activation of the brain for behavioural arousal for waking, dreaming, and sleeping cycles, and for different levels of awareness. They are also involved in the regulation of reflexes, co-ordination of autonomic functions, and modulation of pain sensations, as well as a variety of other functions, judging from their widespread connectivities. There are 27 cell groups*, which correspond to the 27 Nakshatras in number, general shape, and function.

At the time of birth, the new-born is exposed to new conditions that create entirely new set of requirements for its physiology—it has to maintain its own life by breathing, feeding, maintaining body temperature, etc. It has to maintain the constancy of its own internal milieu. This mainly involves the activities of the hypothalamus (Moon) in connection with the cycles determined by the brain stem nuclei (Nakshatras). Before birth, the infant has internal cycles and rhythms, governing its whole physiology and central nervous system. These cycles and rhythms are controlled by the rhythms of its mother, as well as by the intrinsic rhythms of its own central nervous system.

The birth at a specific time and date implies birth at a specific phase of hypothalamic activity (Moon), in conjunction with a specific activity or cyclicity of the brain stem nuclei (Nakshatras). This is the start of individual life and all the phases which follow, as described by Jyotish. From the moment of birth, the cycles follow an orderly progression that take into consideration the cycles of nature—day-night cycles, monthly cycles, etc.

Figure 42 shows the correspondence of the 27 Nakshatras and the brain stem nuclei.

* The brain stem has been mapped for its cell groups, which constitute collections of neurons with specific connections and neurotransmitters. These cell groups have a wide variety of functions and with their connections, they span almost the entire central nervous system. They connect to the thalamus, hypothalamus, basal ganglia, cortex, brain stem, spinal cord nuclei, and many other structures in the central nervous system.

JYOTISH: The Brain Stem and the 27 Nakshatras

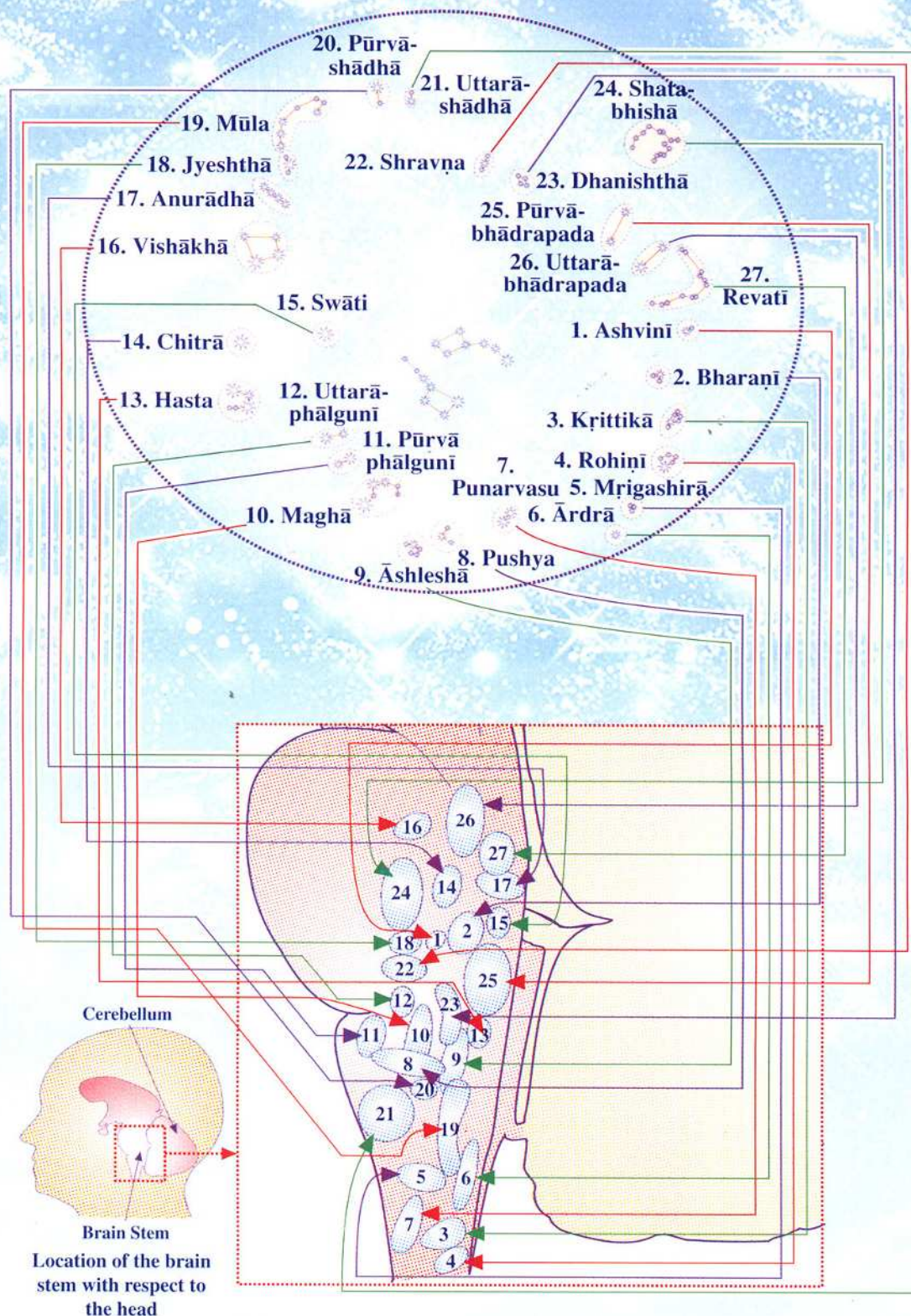


Figure 42 shows the approximate positions of the monoaminergic groups of neurons in a sagittal section of the brain stem and their one-to-one relation to the 27 lunar constellations called Nakshatras.

Note: The names of the monoaminergic groups of neurons are A1 to A15, B1 to B9, the locus ceruleus or L.C., the lateral tegmental group of neurons or L.T., and the lateral parabrachial nucleus or L.P., their names are not indicated on the illustration.

The 12 Bhāvas in the Physiology

The 12 Bhāvas or Houses in Jyotish are associated with aspects of human physiology as well as social, family and other matters of life.

The table displayed on Figure 40 shows how the functions of the 12 Bhāvas as described in Jyotish, and the functions of the 12 cortical areas as discovered by modern science correspond to each other with a one-to-one relationship. The structural relationship of the Bhāva chart with the brain is shown in Figure 39.

When we look at Chart 39, we find that certain Bhāvas (Bhāvas 2, 3, 4, 5, and 6) are connected to cortical areas which are on the right side of the brain and other Bhāvas (8, 9, 10, 11, and 12) are connected with cortical areas that are on the left side of the brain. Bhāvas 1 and 7 are connected with cortical areas that are both on the right and left sides of the brain.

The right side of the brain is considered more synthetic, holistic, *gestalt* in nature. The left side of brain is considered more analytic, specific, discriminative in nature. The right-left sides of the brain have both qualities.

Following is the list of the 12 Bhāvas and their related cortical areas:

Bhāva Name		Cortical Area
Bhāva 1	(Tanu)	Right-left occipito-temporal
Bhāva 2	(Dhana)	Right occipital
Bhāva 3	(Sahaja)	Right parietal
Bhāva 4	(Bandhu)	Right limbic
Bhāva 5	(Putra)	Right frontal
Bhāva 6	(Ari)	Right prefrontal
Bhāva 7	(Yuvati)	Right-left temporal
Bhāva 8	(Randhra)	Left prefrontal
Bhāva 9	(Dharma)	Left frontal
Bhāva 10	(Karma)	Left limbic
Bhāva 11	(Lābha)	Left parietal
Bhāva 12	(Vyaya)	Left occipital

JYOTISH: The Cortical Areas and the 12 Bhāvas

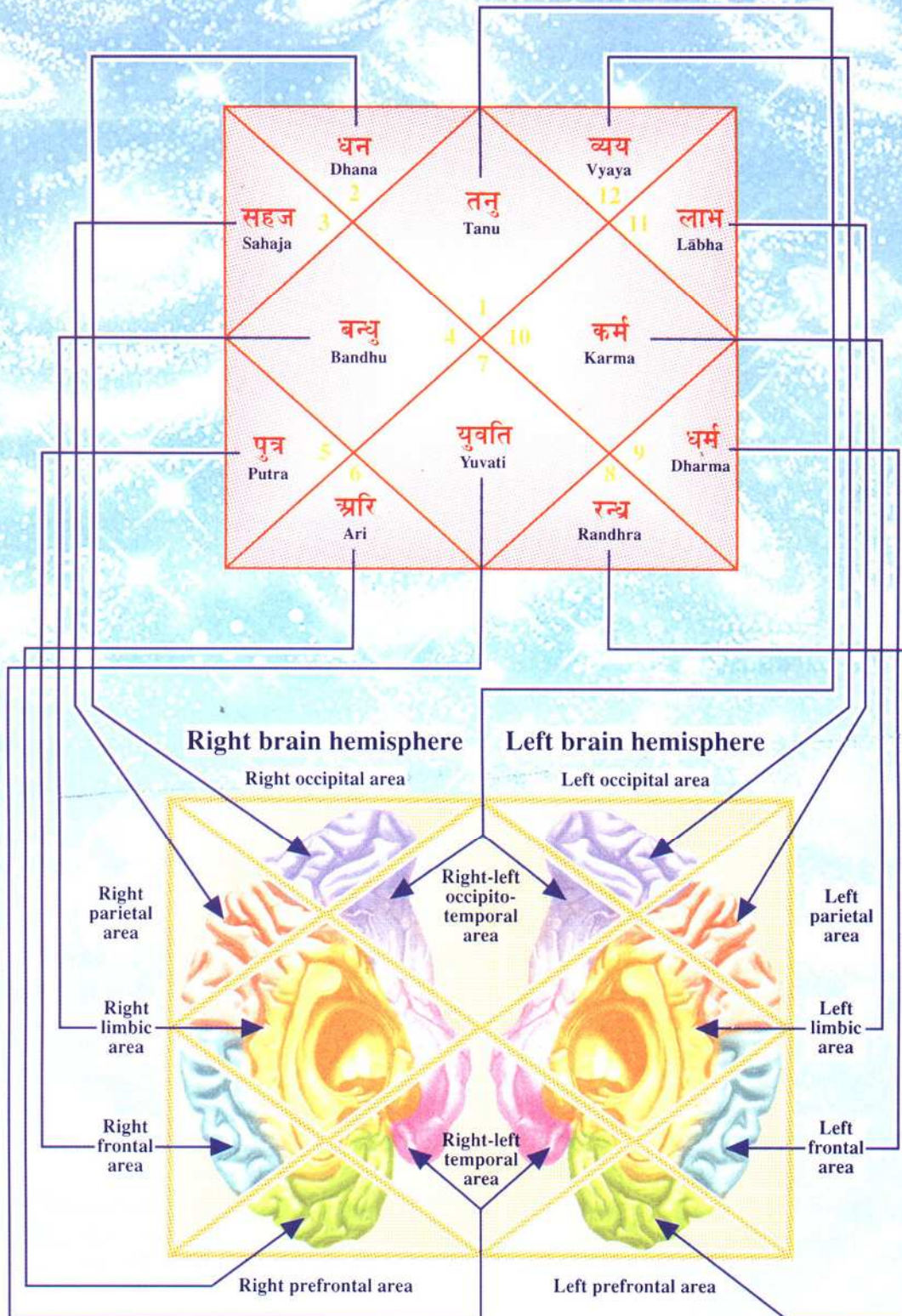


Figure 43. The upper part of this illustration shows the diagram of a Jyotish chart, called a Rashi Kundali, with the names of its 12 Houses or Bhāvas. Each of these Bhāvas corresponds to one specific cortical area on the right or left brain hemispheres as shown at the bottom part of the illustration. The functions fulfilled by the cortical areas and the corresponding functions of the different Bhāvas described in Jyotish are shown in a separate table.

JYISH:
The 12 Bhāvas at the C

Bhāva Name	Parts of the Body	Functions of the Bhāvas
Bhāva 1 Tanu	Head	Self, body, innate nature, ego, intellect, happiness, grief, appearance, personality, birth place
Bhāva 2 Dhana	Face, (right eye)	Wealth, speech, expression, learning to speak, precious stones and metals
Bhāva 3 Sahaja	Throat, neck, shoulders, arms, hands	Valour, vitality, courage, travel, sensuality
Bhāva 4 Bandhu	Heart, lungs, chest, (nose)	Maternal happiness, confidence, belief, comforts, conveyances, mother, home land
Bhāva 5 Putra	Abdomen	Knowledge, intelligence, learning, inclinations of the mind, success in the relative, field of education, romance and liaisons, children
Bhāva 6 Ari	Hips, navel, intestine	Competitors, opponents, enemies, intelligent speech, consultancy, adversity, mental disease, obstacles, worries, anxieties and vices
Bhāva 7 Yuvati	Region below navel, bladder	Life partner, expansion of life and power, desires, marriage, travel, business, trade, partnership
Bhāva 8 Randhra	Private parts, excretory organs	Vulnerability, transformations, enemies, past and future events, research, mystical topics, violence, intercourse
Bhāva 9 Dharma	Thighs	Destiny, fortune, religion, righteous conduct, spirituality, philosophy, higher education, gain without pain, affluence, father's physical aspect
Bhāva 10 Karma	Knees	Activity, occupation, status, honour, position, respect, profession, vocation, name and fame, father's social status, public life, government
Bhāva 11 Lābha	Calves, ankles	Income, any gain, fulfillment of hopes and aspirations, greed
Bhāva 12 Vyaya	Feet, (left eye)	Expenses, losses, enlightenment, foreign lands, investment, fall, sin, journeys abroad, any remote place or confined situation

ISH: the Cortical Areas

Cortical Area	Related Parts of the Body	Functions of the Cortical Areas
R.L. OCCIPITO-TEMPORAL	Appearance	Facial recognition, memory, self-image, personality, language
R. OCCIPITAL	Vision, visual identification of face and facial expression	Visual identification of face and facial expression, appreciation of visually precious objects (precious stones and metals), association with wealth which brings material goods pleasing to the sense of sight
R. PARIETAL	Throat, neck, shoulders, arms, hands	Perception of space (could be connected with travel which is a mutation in space), the sense of touch (connected with sensuality), polymodal sensory integration, somatic sensations and perception of body in space and its relation to the environment—this could be connected with courage and valour
R. LIMBIC	Olfaction, emotions	Emotional and instinctive (confidence, belief, homeland, happiness), contains the hypothalamus (associated with mother—see Grahas in this section), pleasure
R. FRONTAL	Motor control of the body parts	Action-oriented or -dependent functions and inclinations of the mind associated with knowledge, intelligence, learning, inclinations of the mind, success in the relative, field of education, romance, liaisons, children
R. PREFRONTAL	Seat of intuitive thinking or impressions—connected to 'gut feeling'; though indirectly connected to the deep internal organs, refers to a mental function that can be correlated with the right prefrontal area.	Mood regulation, motivation, mental disease, conflict, opposition, worries, anxieties
R.L. TEMPORAL	Connected to autonomic control of organs, including those that are below the navel and bladder	Memory, impressions, sensorial functions, desires, pleasure
L. PREFRONTAL	The left prefrontal area is more analytical and discriminative than the right prefrontal area. The discrimination and desires associated with the private body parts are related to the activities of this left cortical area.	Anticipation of the future, mood regulation, occult or mystical interests, prognostication, research, aggressivity
L. FRONTAL	Thighs	Action-oriented or -dependent functions and inclinations of the mind associated with destiny, fortune, religion, righteous conduct, spirituality, philosophy, higher education, gain
L. LIMBIC	Knees	Elaboration of personality, vocation, contains the thalamus (associated with king and father—see Grahas in this section)
L. PARIETAL	Calves, ankles	Income, prosperity, hopes, aspirations and their fulfillment. Sensory integration, physical comfort, sensory fulfillment
L. OCCIPITAL	Vision	Visual discrimination, visual attraction and temptation

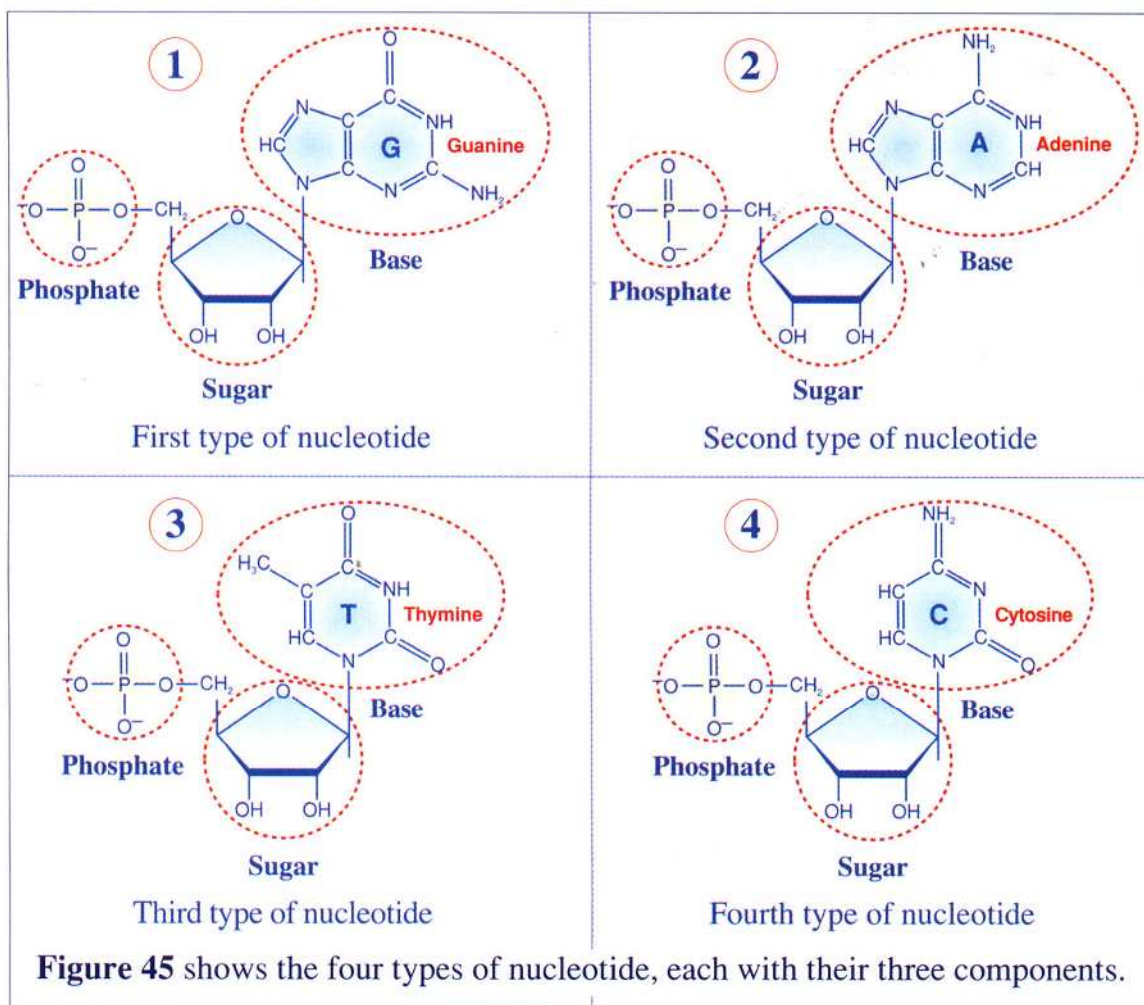
Figure 44

The DNA

Expression of Veda and the Vedic Literature¹

DNA carries the information necessary for the creation and maintenance of the structure and function of the physiology

The DNA is a long, threadlike macro-molecule made up of a large number of smaller molecules which are called nucleotides. Each nucleotide is composed of a base, a sugar, and a phosphate (see Figure 45). The nucleotides are arranged in



sequence, one after the other, forming a long thread. Two such threads (usually called helices) winding one around the other makes what is called a DNA molecule². These threads are attached together by hydrogen bonds. This is the result of sharing of protons between the bases located in the centre of the double helix of the DNA (see Figure 46). The double helical DNA therefore winds up around a central axis made of hydrogen bonds (see Figure 47).

¹ DNA is introduced here with Jyotish because a large part of this section deals with the relationship of the structure of DNA with Jyotish (establishing the correspondence between the components of the DNA and their counterparts in the universe).

² These two threads correspond to Purusha and Prakriti as explained later.

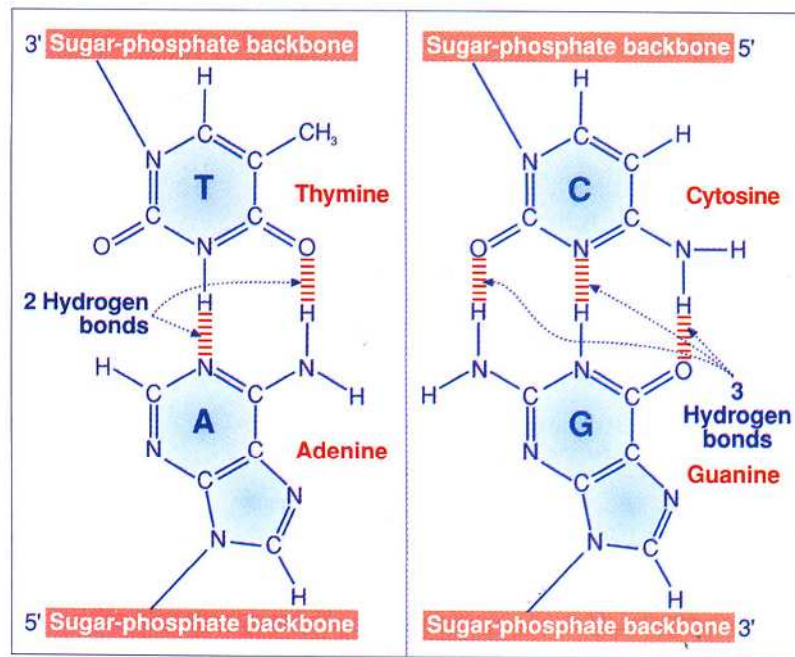


Figure 46 shows the two types of connections between the bases through hydrogen bonds

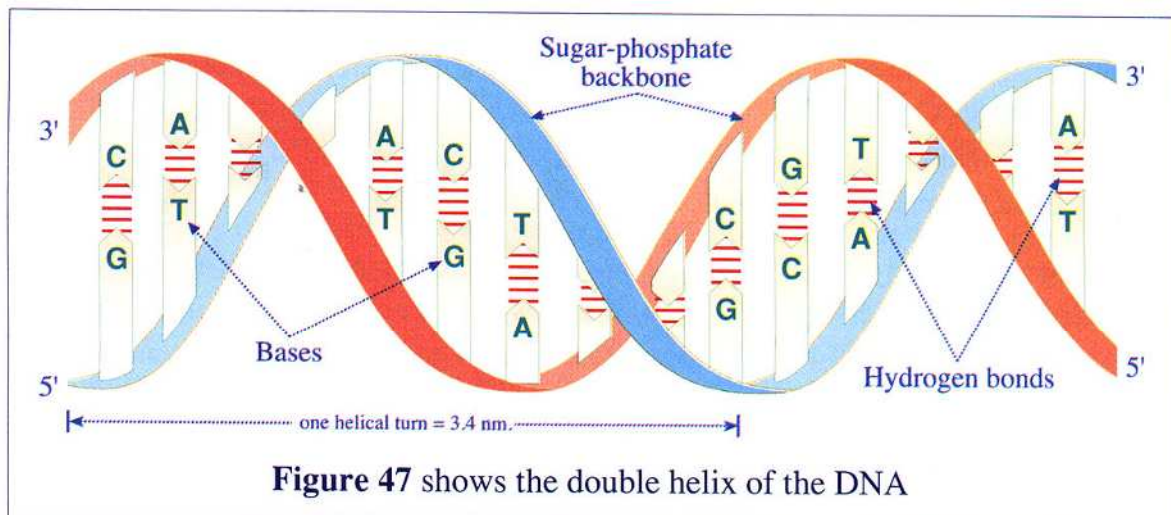


Figure 47 shows the double helix of the DNA

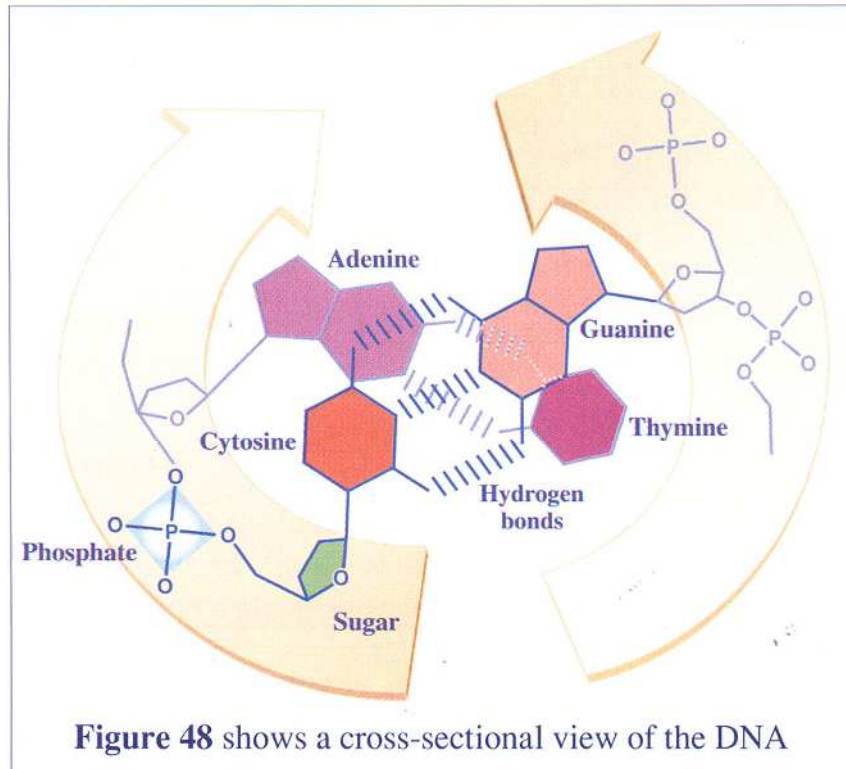
The sugar and the phosphate are similar for all the nucleotides. Each nucleotide however has one of four bases—guanine, adenine, thymine, and cytosine. They are abbreviated as G, A, T, and C, respectively. The specific order and sequence of these bases determines the genetic information. The sugar and phosphate groups play mainly a structural role as the backbone of the DNA (see Figures 47, 48).

In the DNA, the bases of one helix combine with the bases of the other in such a way that G always combines with C, and A with T. The highest molecular weight base is G, followed by A, then T, and then C³.

The codons

A codon is a specific sequence of three bases. Since there are a total of four different

³ This will become relevant later in the discussion on the eight Prakritis.



bases, the total number of possible codons is 64—all possible permutations of four into three units (4^3). These 64 codons are at the basis of the entire genetic information. Each of them, except four, codes for a specific amino-acid. The total number of bases needed to make up these 64 codons is $64 \times 3 = 192^4$.

The sequence of the codons arranged one after the other on the DNA is ultimately translated into specific sequences of amino-acids. Amino-acids sequences are what leads to the formation of the peptides, proteins and enzymes that build and orchestrate the activity of all the components of the physiology and its structure and function⁵.

Of the four codons that do not code for amino-acids, one is called a start codon. It acts as a reference, i.e., the starting point for the emergence of any information from the DNA. It is like the silent space or gap in a text, defining where to start a word, a sentence, a paragraph, or a chapter⁶. The other three codons are called stop codons. They are the punctuations which say where a sentence or a paragraph end. All information coded in the DNA is started by the same start codon and stopped by one of three possible stop codons⁷.

4 Chapter IV describes how the structure of pure intelligence available in the structure of Veda, as brought to light by Maharishi's Apaurusheya Bhāshya, is reflected in the structure of DNA. In particular the correspondence of the 192 Sūktas of the first Maṇḍala of Rk Veda with the 192 bases necessary to create all possible codons is discussed.

5 This is how the DNA expresses itself into the entire structure and function of the physiology. The DNA contains informations from millions of years of evolution and the relationships of the individual physiology with nature and the entire cosmos.

6 It corresponds to the Saṁhitā value as described later.

7 They correspond to Ṛishi, Devatā and Chhandas as described later.

**The fundamental duple helical structure of DNA reflects
a fundamental concept in Veda described in Maharishi's Vedic Science**

The two helices of DNA are an exact mirror image of each other. One of the two is called the *template strand* and the other the *coding strand*. The *coding strand* is a 'silent witness' and does not participate in the formation of the messenger RNA (m-RNA). It simply maintains the memory of the sequence intact. It corresponds to the Purusha⁸ value:

मयाध्यक्षेण प्रकृतिः सूयते सचराचरम्

Mayādyakṣheṇ prakṛtiḥ sūyate sacharācharam

'Under my presidency, my nature performs.' *Bhagavad Gītā* 9.10.

The other helix participates as a catalyst for the expression of the information available in the DNA. It corresponds to the value of Prakṛiti⁸. Both helices remain therefore unchanged while orchestrating all change. One of them, however—the *coding strand*—is more transcendental than the other⁹.

**The structure of intelligence available in Veda, as brought to light
by Maharishi, is reflected in the structure of the DNA.**

*The four bases
and Saṁhitā,
Ṛishi, Devatā,
and Chhandas*

In earlier chapters, the concept of the differentiation of unity into multiplicity, through the emergence of the three values of Ṛishi (knower), Devatā (process), and Chhandas (known) was introduced. Maharishi's Vedic Science describes these three aspects and their unified state (Saṁhitā) as the four basic aspects of Natural Law underlying all creation.

In a similar way we find that the basic units of intelligence in the DNA are four in number (C, T, A, G). One of these four—thymine (T), is used only in the DNA while the other three participate in the formation of RNA as well. By analogy it could be possible to suggest that thymine corresponds to the Saṁhitā value while the other three correspond to Ṛishi, Devatā, and Chhandas¹⁰.

8 Purusha is the uninvolved aspect of wholeness corresponding to the value of Atyantābhāva, the silent witness. Prakṛiti is wholeness in its dynamic quality; it is related to Anyonyābhāva, the structuring dynamics.

9 Interesting resemblance and characteristics emerge from the comparison of these two values. For example, the active DNA helix is exposed to greater wear and tear which threatens to disrupt its integrity and perfect sequence. This is because it participates in the action even though only as a catalyst. The presence of the coding strand—the transcendental sequence—is important in order to maintain memory. This is an illustration of the principle in the Vedic Literature of self-referral: 'Yogastu kuru karmāṇi'. Coming back to the Self—the perfect home of Natural Law—is necessary to maintain memory of the proper sequence of expression of Natural Law and insure that all action is spontaneously lived according to Natural Law.

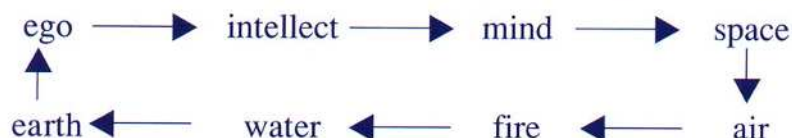
10 Not enough physiological knowledge is available about the differentiation among the four bases to ascertain which is to be assigned to which of the four basic aspects of Natural law. The basic organizing power of the four basis nevertheless corresponds to these four basic aspects of Natural Law.

The start and stop codons and Samhitā, Rishi, Devatā, and Chhandas

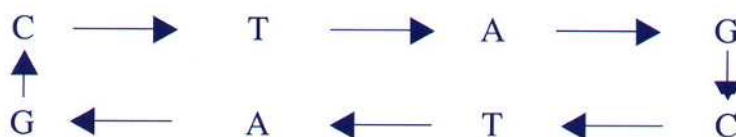
An even more compelling comparison is the identification of the start codon with the Samhitā value and the three stop codons with Rishi, Devatā, and Chhandas. Because all information starts with the start codon, and all relative values emerge from Samhitā, these two can be seen as identical. As all aspects of the Vedic literature and of the physiology (see previous chapters) are grouped into one of the three values, and all information in the DNA is punctuated by one of the three stop codons, it can be said that there is a correspondence between them. Not enough physiological information is available to say which of the three stop codons corresponds to Rishi, Devatā, or Chhandas.

The eight Prakṛitis in the DNA

Another fundamental aspect of Natural Law is the aspect of the eight Prakṛitis introduced earlier in Chapter III. In Maharishi's Vedic Science, these Prakṛitis are seen as a loop made up of eight elements, looping back onto themselves (as shown below). These are ego, intellect, mind and space; followed by air, fire, water and earth. These elements start with ego, which is the most subtle among them, and become progressively more expressed (more manifest, more gross). Earth being the grossest aspect.



When we look at the basic structure of DNA, we find, as described previously, that it is made out of four types of nucleotides, based on four types of bases, abbreviated as C, T, A, and G. These combine with their complementary bases to form the complementary helix. The complementary bases will be: G, A, T, and C, respectively. The four bases and their complementary bases can be seen to form a loop as shown below:



We have noted that one of the two DNA helices, the *coding strand*, represents the silent, transcendental value, which does not participate directly in DNA expression (as described above). This is why we can assign to its four bases an unmanifest quality similar to the four first elements of Prakṛiti—ego, intellect, mind, and space. These also are subtle and, relatively speaking, transcendental to outer sensory expressions (beyond direct grasp by the senses). In this way we find that even though we are considering similar bases, those that are on the *coding strand* can be seen as having a less expressed quality than their counterparts on the template strand. This justifies the exact correspondence between the eight Prakṛitis and the eight fundamental bases of DNA.

DNA and Maharishi Jyotish— the counterparts of the DNA in the universe

The Nine Grahas in the DNA

The cross-sectional view of the DNA illustrated in Figure 49, helps to visualize how the nine Grahas can be located in the DNA.

*The DNA axis—
the Sun*

At the centre of the double helix is its axis, which is made of hydrogen bonds (see Figure 49). Hydrogen bonds result from the sharing of protons between complementary bases (see Figure 46). The whole DNA is made by the different components of the nucleotides circling around a central axis. This is similar to the solar system. The planets in the solar system revolve around the sun, which is made up mainly of hydrogen. The sun is the Brah-masthān—the center—of the solar system. Likewise, the hydrogen bonds forming the axis of the DNA are like the Brah-masthān—the center—of the DNA. The **Sun** therefore corresponds to the **DNA axis**.

Similar to the various planets rotating around the sun, the various DNA components rotate around the DNA axis. For example, the adenine base can be found at different places throughout the DNA along its axis. This can be described like the rotation of a planet. When one considers all the adenines in the whole DNA one finds that adenine has occupied the entire 360 degrees around the DNA axis. Similarly, the planets occupy the 360 degrees around the sun at different times in different positions. All DNA components occupy at different times positions at all 360 degrees around the centre of the helix. It is as if the dimension of time in the rotation of the planets around the sun is substituted by the longitudinal direction of the helix of the DNA. It is notable that in its activity DNA opens and closes¹¹ at different times. This exposes different genes at different times to allow specific information to be expressed as and when needed. This maintains balance in physiological function and structure¹². This type of function, as well as the position and time elements, are similar to the way the planets operate around the sun as described in Jyotish.

The various planets correspond to the various DNA components in the following way.

*Guanine—
Jupiter*

Jupiter is the heaviest planet around the sun. It corresponds to the heaviest component in the DNA: **Guanine**. Jupiter has several satellites. The biggest satellite consists of hydrogen and nitrogen. These are also the atoms found as side-chains around guanine (see Figures 45 and 47).

11 The two strands (helices) of the DNA separate from each other at specific positions at different times. This allows the enzymes to copy the exposed portions of the template strand and the creation of RNA and proteins.

12 The relationship between the DNA, the physiology and the universe is very intimate in structure and function. The cosmic effects on the DNA and the physiology are acting all year round. Unless individual life is maintained in harmony with the cycles and rhythms of nature and the reciprocal relationships between individual life and cosmic life are taken into consideration, there will never be perfection in human life. In this discovery is a turning point: the age-old conception of the inevitability of suffering becomes the reality of eternal happiness and perfection of life in bliss and fulfillment.

*Adenine—
Saturn*

Saturn is the second heaviest planet and corresponds to the second heaviest base: **adenine**. Saturn's largest satellite, Titan, consists mainly of nitrogen. Adenine's side chain is nitrogen.

*Thymine—
Venus*

Venus, the next in mass, corresponds to **thymine**, the next in molecular weight. The atmosphere of Venus is very dense. Thymine is the most heavily side-chained base, which is similar to having a heavy atmosphere.

*Cytosine—
Mars*

Mars corresponds with **cytosine**. **Mars** has a mass rather similar to that of Venus, but with a lighter atmosphere; so is cytosine in comparison to thymine. Cytosine has less side chains than thymine and they include oxygen, nitrogen and hydrogen. Mars has ice on its surface and nitrogen in its atmosphere, therefore including the elements of oxygen, nitrogen and hydrogen¹³.

*Sugar—
Mercury
Phosphate—
the Moon*

Mercury and the **Moon** correspond to the **sugar** and the **phosphate** molecules respectively. The moon is the smallest among the planets considered in Jyotish and phosphate has the smallest weight among the molecular components of the DNA. Mercury and the Moon have the most frequent rotation around the sun, as do the sugar and phosphate molecules around the DNA axis.

*DNAase—
Rāhu
DNAPolymerase
—Ketu*

Rāhu and **Ketu** correspond to the enzymes that act on the DNA. The enzymes that are constantly involved in the DNA activity are of two categories: those that cut and remove the DNA components (**DNAase**) which correspond to Rāhu; and those that rebuild and synthesize the DNA (**DNA polymerase**) which correspond to Ketu.

In Jyotish, Rāhu is the ascending lunar node (the 'dragon head' which swallows) corresponding to the enzymes which cut. Ketu is the descending node (the 'tail of the dragon' which releases) corresponding to the enzymes which rebuild¹⁴.

The Twelve Rāshis in the DNA

The 12 Rāshis (or solar constellations) are categorized in Jyotish in two ways: (1) whether they are movable, fixed or dual; and (2) whether they have predominantly heavy or light characteristics, based on four levels associated with the elements of earth, water, fire and air (earth being the heaviest and air the lightest).

In the same way, the four fundamental nucleotides of the DNA (with their three components each, totaling 12 components), can be divided into similar categories. The four bases (each base characterizes one nucleotide) can be considered as movable since these are the changing dynamic elements of the DNA. The phosphates

¹³ These elements do occur in the side chains of other bases. They are mentioned here specifically to highlight some of the similarities which guided the identification of the counterparts of the DNA components in the solar system.

¹⁴ In Maharishi's Vedic Science these values are seen in terms of the relationship between unmanifesting and manifesting—submerging and emerging.

JYOTISH: DNA and the 9 Grahas

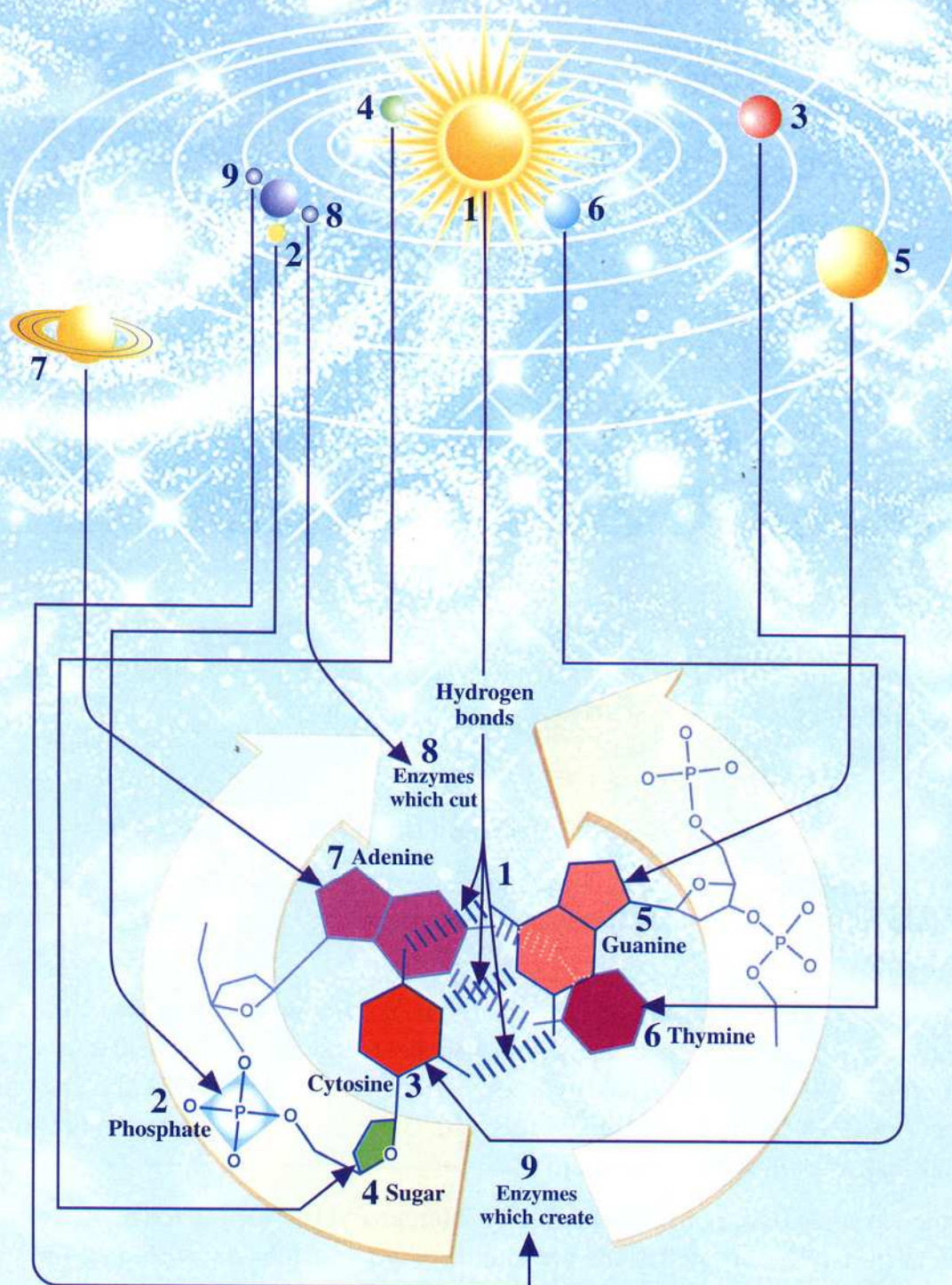


Figure 49 shows a cross-section of the DNA with its constituents and their one-to-one relation to the planets of the solar system. The DNA revolves around a central axis made of hydrogen bonds. These hydrogen bonds correspond to the Sun. The heaviest constituent of DNA is guanine, it corresponds to Jupiter, the heaviest planet. In the same way adenine corresponds to Saturn, cytosine to Mars, and thymine to Venus. The sugar corresponds to Mercury and the phosphate to the Moon. The shadowy planets—Rahu or the ascending lunar node and Ketu or the descending lunar node—correspond to enzymes that act within the DNA and yet are not a real part of it.

are fixed in the backbone. The sugars connecting the phosphate and the base have a dual characteristic. Also, as described earlier, the nucleotides of guanine are the heaviest and their components would correspond to the element earth. The adenine nucleotide would correspond to the element water; the thymine nucleotide to fire and the cytosine nucleotide to air (see the table below). The phosphate which is in the nucleotide whose base is guanine, for example, will represent a fixed—earth element. The phosphate which is in the nucleotide whose base is adenine will represent a fixed—water element. The following table will list the connections between the twelve Rāshis and the DNA (see also Figure 50).

	DNA component	Cosmic Counterpart	Characteristics	
1	T-base	Aries	Fire	Moveable
2	G-phosphate	Taurus	Earth	Fixed
3	C-sugar	Gemini	Air	Dual
4	A-base	Cancer	Water	Moveable
5	T-phosphate	Leo	Fire	Fixed
6	G-sugar	Virgo	Earth	Dual
7	C-base	Libra	Air	Moveable
8	A-phosphate	Scorpio	Water	Fixed
9	T-sugar	Sagittarius	Fire	Dual
10	G-base	Capricorn	Earth	Moveable
11	C-phosphate	Aquarius	Air	Fixed
12	A-sugar	Pisces	Water	Dual

The 27 Nakshatras in the DNA and the cellular nucleic acids¹⁵

As was discussed earlier, the 27 Nakshatras are distant constellations of stars, also called the lunar constellations. They are the counterparts of the 27 groups of nucleic acids in the cell.

There are 23 types of clusters of DNA material in the human cell nucleus, they are called chromosomes. Nucleic acids can also be found in the form of messenger RNA (m-RNA), transfer RNA (t-RNA), ribosomal RNA (r-RNA), and mitochondrial DNA in the cytoplasm of the cell. These $23 + 4 = 27$ correspond to the 27 Nakshatras as illustrated in Figure 51¹⁶.

All nucleic acids have active parts usually intercalated between inactive, non-sense, or silent parts. The constellations are similar if we consider the stars and the void between them as their active and silent aspects respectively.

¹⁵ The term nucleic acids refers to a class of molecules which includes DNA and RNA.

¹⁶ Today's knowledge about the function of the different chromosomes is not complete. There are only some details about where a few different physiological structures and functions are coded. This is not enough to make it possible to correlate one to one the chromosomes with their counterparts in the universe. At this time, therefore, the correlation identifies that the Nakshatras are the counterparts of the nucleic material in the cell but research is still going on in order to sort them out one by one. Figure 49 is therefore only an illustration in which future rearrangement of items will be made as greater knowledge is gained about the functions of different chromosomes. For this, the relative size of the chromosomes as well as their functions will be used in reference with the size and function of the Nakshatras.

JYOTISH: DNA and the 12 Rashis

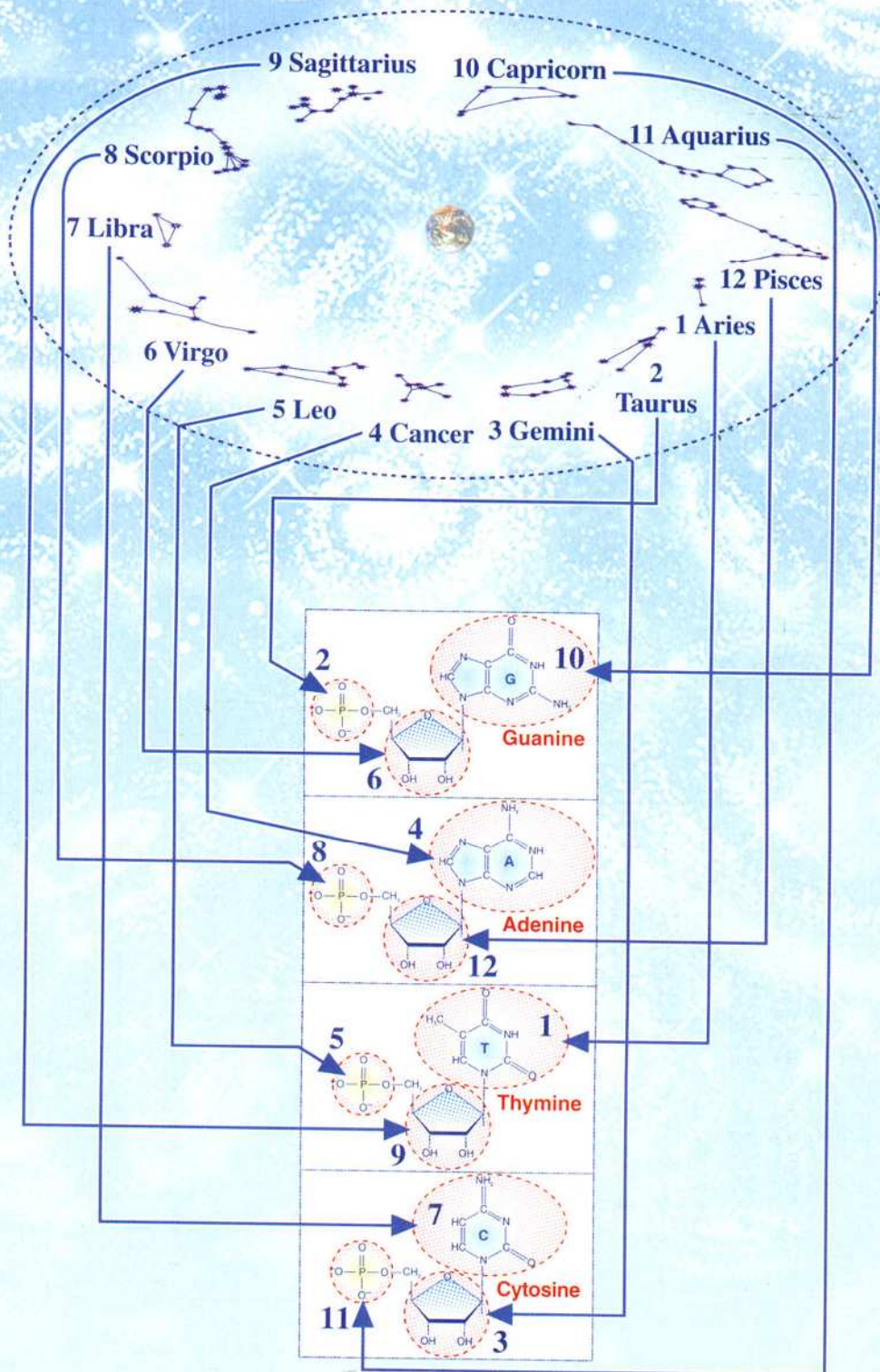


Figure 50 shows a longitudinal view of the 4 nucleotides at the basis of the structure and function of the DNA with their 12 parts and their correspondence with each of the 12 solar constellations called Rashis.

JYOTISH: The Nucleic Acids and the 27 Nakshatras

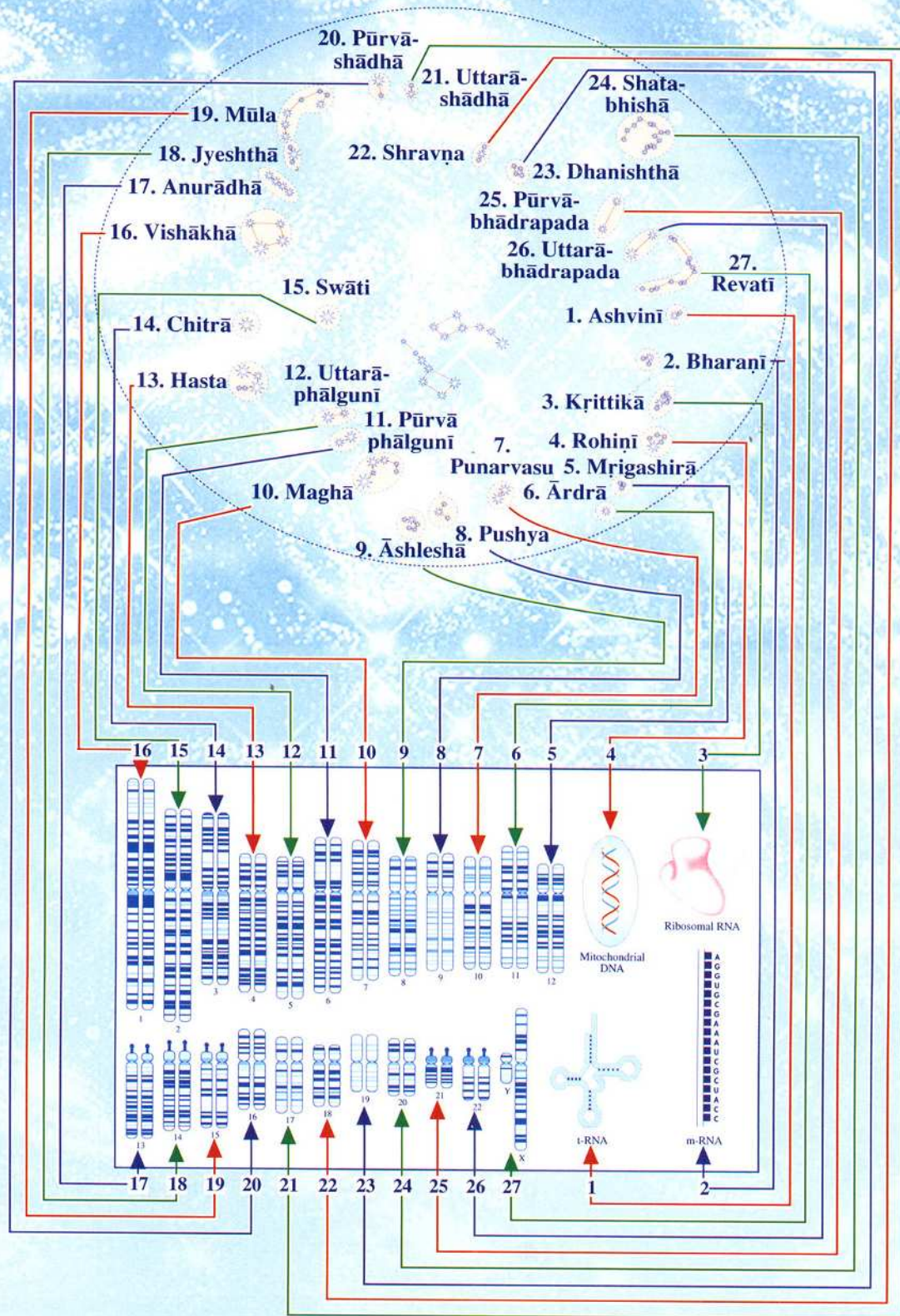


Figure 51 shows the 23 chromosome pairs, the transfer RNA (t-RNA), the messenger RNA (m-RNA), the ribosomal RNA (r-RNA), and the mitochondrial DNA. Together they form 27 groups of nucleic acids found in the cell. They correspond to the 27 lunar constellations called Nakshatras.

13. NYĀYA: Thalamus

Nyāya represents the **distinguishing and deciding** quality of consciousness, which simultaneously comprehends opposite qualities of consciousness. It is the 'lamp at the door', which sees the holistic as well as the specific. It sees both matter and intelligence, physiology and consciousness, and integrates them. It has a predominantly Rishi quality. There are five chapters in Nyāya, with two divisions each, totaling 10 divisions. The first Sūtra of the first chapter summarizes the whole subject matter of Nyāya in 16 topics.

The Thalamus

In the physiology, this distinguishing and deciding function is fulfilled by the thalamus. The thalamus relays sensory inputs to the primary sensory areas of the cerebral cortex, as well as information about motor behaviour to the motor areas of the cortex. It also mediates motor function by transmitting information from the cerebellum and basal ganglia to the motor regions of the frontal lobe—the primary motor cortex and higher order motor areas. In addition, the thalamus is involved in autonomic reactions and the maintenance of consciousness.

Almost all the thalamic nuclei project to and receive input from the cerebral cortex. These recurrent connections allow the cortex to modulate the input it receives according to the on-going activity. More wide-spread connections in a group of thalamic nuclei influence the activity of cells, not only in the cerebral cortex, but also in the thalamus itself. These diffuse projection nuclei are part of a system believed to govern the level of arousal of the brain and regulate the overall level of neuronal excitability. They project to all the functional divisions of the cortex. This discriminative—**distinguishing and deciding**—as well as integrating power of the thalamus sees intelligence as well as specific values of action, behaviour, motivation, and perception.

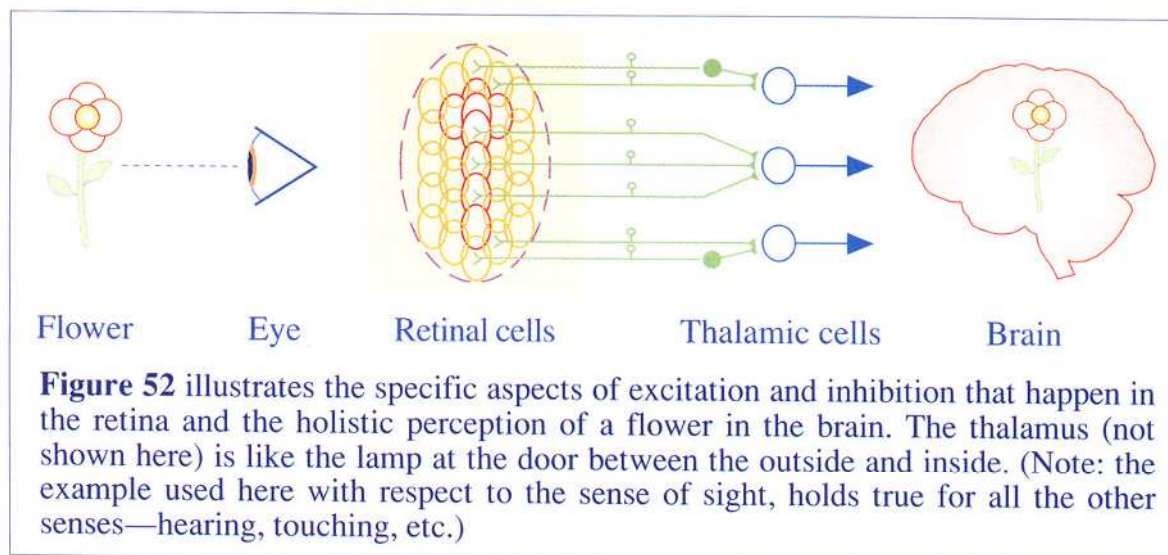
*Nyāya:
Home of
Justice*

Nyāya also means justice. If we consider the thalamus to be the home of justice, there will be justice between innocent perception, recorded through the senses of perception coming to the thalamus, and intellectual conclusion to initiate action.

The involvement of the thalamus in the maintenance of alertness gives it even more the quality of a 'lamp at the door'.

The sense of sight examined from the perspective of Nyāya—an example

For illustration, the sense of sight will be briefly analyzed from the perspective of Nyāya. The process of seeing a flower, for example, involves the capture by the eye of the reflection of light from the flower. This light reaches the retina where it



excites or inhibits a number of cells. From the perspective of the individual receptor cells in the retina, there is no sense of flower or any other object. They either get inhibited, excited or remain neutral. Their reaction, therefore is at a simple 'point' level of consideration.

The specific characteristics of the flower (which we can call the point values of the flower) will however lead to the stimulation or inhibition of a very specific type and number of cells in the retina. The information from these cells will be funnelled down through a number of stations to reach the thalamus. From the thalamus they will be sent to the cerebral cortex and get collectively perceived as a flower with certain characteristics.

The concept of flowers is a holistic concept about a specific set of objects having certain characteristics. Flowers can be very different from one another in size, color, shape, etc., yet we still call them all flowers. 'Flower', therefore is an abstract concept referring to concrete objects, yet transcending the specific characteristics of each object. We can say that a flower is more than the collection of its parts. A flower can, for example evoke feelings and have sentimental meanings.

In our analysis of Nyāya from the perspective of what happens in the brain, we therefore find that the specific response of the retinal cells corresponds to the specific values, or what we can call the outer, specific, relative, and changing point values¹. The rebuilding of a flower by the cerebral cortex into a wholeness² which is more than the sum of its parts represents the 'more holistic', 'more inwardly-directed' and 'more transcendental'³ aspect.

1 In Nyāya, specific values (i.e. the objects of perception) are referred to as Prameya.

2 A 'wholeness' can be an atom, a cell, a flower, a mountain, a city, a continent, a galaxy, the universe. Totality or infinity, which includes all 'wholenesses', has been defined in Chapter I in terms of the Self—Ātmā, the Unified Field of Natural Law. This is the only 'true' wholeness. This is called Prama in Nyāya. It is consciousness, intelligence, which is 'Swarūpe avasthānam'—the observer is established in himself, Yoga Sūtra 1.3.

3 Transcendence as experienced during the practice of Transcendental Meditation—TM—refers to the state of pure awareness—the experience of the Self, Ātmā, the Unified Field. The term is utilized here only to refer to the whole which is more than the sum of its parts.

The thalamus is therefore, the connecting point between the outer and the inner—the specific and the holistic. It is the lamp at the door⁴, balancing and maintaining justice between parts and wholeness. It upholds them both⁵ (see Figure 52).

**Perception involves different aspects—
from the object to the subject through the process of observation**

In the process of perception, the most ‘objective’ aspect refers to the physical qualities of the object. This could correspond, for example, to the physical characteristics of light that are reflected from a flower and which can be detected and recorded by an instrument. All instruments having exactly the same characteristics would give, under the same conditions, the same data for the same object⁶. This objective aspect is called, in Maharishi’s Vedic Science, the aspect of Chhandas.

Perception is not merely an objective phenomenon. It involves an observer—a subject, having individual qualities. This is the subjective aspect of perception, coloured by the subjective qualities of the observer⁷. This aspect related to the subject is called, in Maharishi’s Vedic Science, the aspect of Rishi.

The process of observation, linking the object with the subject, is referred to, in Maharishi’s Vedic Science, as the aspect of Devatā.

Knowledge is the result of the coming together of the three values of Rishi, Devatā and Chhandas. This is called Samhitā⁸.

The process of knowing, experiencing, or perceiving, involves different stages. These stages are on different physical levels, from the senses which record the inputs, to the mind which debates, to the intellect which decides and the Ātmā—Prama, which experiences. These levels, or stages, are from gross to subtle to subtlest—from the relative surface values of sensory experience to the

4 The term ‘lamp at the door’ is an expression used in Maharishi’s Vedic Science to describe Nyāya in its quality of ‘lighting up the outer and the inner aspects of the house’ which refers allegorically to the non-Self and the Self—the specific and the holistic. It is also that Anyonyābhāva and Atyantābhāva level where every transformation takes place.

5 In his commentary on Nyāya, Maharishi explains this value by bringing to light the significance of the first two words of Nyāya: Pramā-ṇa, prameya. Maharishi points out that these words can be grouped in Sanskrit in two different ways: Pramā-ṇa, prameya versus pramā, ṇa-prameya. When literally translated this would give: ‘consciousness-not, matter’ versus ‘consciousness, not-matter’. Together these meanings both confirm and negate consciousness and matter. They give priority to one and the other simultaneously. This is how Nyāya maintains balance between the abstract and the concrete—between consciousness and matter.

6 On the other hand, instruments detecting different aspects of the object or having themselves different characteristics would give entirely different data. An infrared camera, a black and white or colour camera, a microscope, and a wavelength measuring device will give different kinds of appreciation of the same flower. Ultimately, an in-depth analysis from a pure physical stand point would reveal that the flower is made out of atoms which are themselves made of elementary particles. Elementary particles are according to quantum mechanics, waves in a field. Recent Unified Field theories indicate that all fields are the expressions of one underlying Unified Field of Natural Law. The most objective evaluation of the essence of any object therefore reveals that it is, in actuality, the Unified Field of Natural Law.

7 Ultimate subjectivity is the Self—Ātmā (referred to as Prama in Nyāya). The real Self is the same Unified Field of Natural Law described as the essence of every object. It is the Self of every subject. From this level of pure subjectivity perception has a non-changing absolute reality. This is perfection in perception where every object and subject are appreciated in their true absolute value (beyond relativity).

8 When the reality of Ātmā—the Unified Field of Natural Law—dominates in the awareness then Rishi, Devatā and Chhandas are seen as oneness, wholeness, totality, all together in one Samhitā.

absolute level of Pure Being.

Maharishi's Vedic Science and Technology provides the way to realize the absolute level of Pure Being on all levels—discover and experience the absolute on the sensory level, on the level of the mind, the level of the intellect, and the level of the Self. In Maharishi's Vedic Mathematics, the realization of the absolute in everything is the realization of the absolute number. By drawing a circle around each number and each limited value one is reminded that all parts contain infinity—all parts are indeed infinity. This is the area of the Prātishākyas (see Chapter V, Sections 31–36) and the essence of the declaration of:

सर्वमं खल्विदमं ब्रह्म
Sarvam khalvidam Brahm
All is wholeness, totality.
(Chhāndogya Upanishad 3.14.1)

Knowledge is different in different states of consciousness

*Seven states of
consciousness*

Whether consciousness or matter predominate in the awareness depends on the state of consciousness of the observer. Maharishi's Vedic Science defines seven states of consciousness: sleeping, dreaming, waking, Transcendental Consciousness, Cosmic Consciousness, God consciousness and Unity Consciousness⁹.

1. Sleeping

If the thalamus gates are shut off or if the thalamus is in a 'sleeping mode'—i.e., the lamp at the door is not lit—then there will be no perception at all. This is the state of sleep.

2. Dreaming

The state of dreaming is similar to sleep except that during dreaming the awareness is processing stored impressions, giving them an illusory reality. It is as if the lamp is not lit, but one is absorbed in an imaginary reality.

3. Waking

In the waking but not enlightened state of consciousness, a sensory stimulus allows the perception of an object but, overshadows the experience of Ātmā. It is as if the lamp is lit outside but not inside. Perception in this case seems to give a reliable experience of the object. This is however happening on the basis of an 'overshadowed', and 'confused' 'screen' of consciousness. The perception of the object is therefore only a 'coloured', and 'prejudiced' assessment. The more stress in the nervous system (i.e., the 'darker' it is inside), the farther is perception from reality.

*4. Transcendental
Consciousness*

If absolute wholeness is maintained without allowing the perception of any specific value, then one is in a transcendental

⁹ See footnote 12 page 133.

state of consciousness—beyond any sensory experience and beyond any thought. It is as if the lamp is lit inside but not outside.

**5. Cosmic
Consciousness**

When the lamp is perfectly placed at the door, both the inside and outside are perceived. In the Cosmic state of consciousness, the inner and the outer are seen as separate values—one non-changing (the inner, the Self) and the other changing (the outer, the non-Self). This is the basis of enlightenment.

**6. God
Consciousness**

On the basis of a clear and unperturbed inner screen of consciousness, outer perception gets more and more refined and sharp. It is as if one has now secured the inner strength and stability needed to allow a non-fearful, bold and clear exploration of the outer values without hesitation, apprehension or doubt. When this reaches its highest possible level of clarity and perfection, the outer is perceived in its full relative glory as a perfect dynamic expression of the absolute inner value. This is the state of God Consciousness, also described by Maharishi as a state of glorified Cosmic Consciousness

**7. Unity
Consciousness**

In the state of full enlightenment—Unity Consciousness, the inner Self—Ātmā, the Unified Field of Natural Law¹⁰, becomes the only inner experience. This experience of total unity—infinity—permeates individual awareness under all conditions of perception, thought, speech and action. Yet, in this state of consciousness, the thalamus (i.e. fully lively Nyāya), maintains its distinguishing and deciding characteristics. It still allows the awareness to detect specific values but instead of acknowledging them or perceiving them only in terms of ‘small wholenesses’ (such as a flower, an elephant, a mountain, or a galaxy), it always sees totality—the unified field. The inner reality is never overshadowed by any outer experience, yet sharpness of perception of all specific qualities is maintained and enhanced. This is a state in which fullness of life is lived on all levels—specific and holistic, outer and inner. This is how Nyāya maintains ‘justice’ between dynamism and silence and between change and non-change—the relative and the absolute. The flower can be seen but the Self is never overtaken—specific values and ‘small wholenesses’ can be appreciated while infinity is never overshadowed. This is like the vision of the goldsmith who sees the form but in every form he sees the gold. This is called enlightened vision, which has no darkness in it at any level—whether the sensory level, the mind, the intellect or the ego.

The five Chapters of Nyāya correspond to five general divisions of the thalamus

The thalamus is divided by the internal medullary lamina into five areas: rostral (or anterior), medial (or ventral), lateral, caudal (or posterior), and intralaminar. Each of these areas is found in both the right and the left hemispheres of the brain. Therefore, there are twice five general divisions of the thalamus, corresponding to the five

¹⁰ See Chapter I.

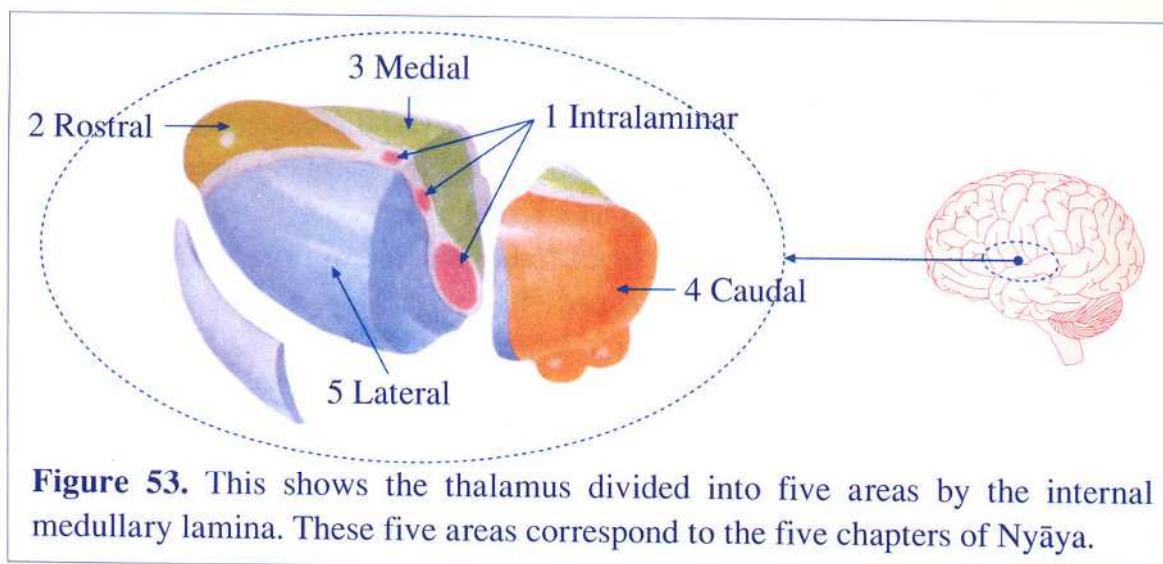


Figure 53. This shows the thalamus divided into five areas by the internal medullary lamina. These five areas correspond to the five chapters of Nyāya.

chapters and ten divisions of Nyāya (see Figure 53).

**The division of the topics of Nyāya into 16 categories is reflected
in the division of the thalamus into 16 nuclei**

The first verse of the book of Nyāya lists 16 categories or topics. It is through these 16 categories that the entire function or subject-matter of Nyāya is fulfilled.

The thalamus is also divided into 16 groups of cells called nuclei, each of which have a specialized function. It is through these 16 nuclei that the entire function of the thalamus is fulfilled.

These nuclei and their corresponding aspects in Nyāya are shown in Figure 54. Figure 55 shows the connectivities of each nucleus, their functions in the physiology, and their correspondence to the categories of Nyāya.

The 16 nuclei of the thalamus correspond one to one to the 16 categories of Nyāya in structure and in function in the following way:

1. Pramāṇa

The first category or topic of Nyāya is called 'Pramāṇa' or the '**means of valid knowledge**'. It has four subdivisions: (a) perception, (b) inference, (c) comparison, and (d) verbal testimony¹¹. The first nuclear group of the thalamus called the **pulvinar** corresponds to this first category of Nyāya. It also has four subdivisions: (a) pars inferior, (b) pars lateralis, (c) pars oralis, and (d) pars medialis.

The **pars inferior** connects the superior colliculus with areas 17, 18, and 19 of the cortex and is responsible for higher order visual integration, i.e. **perception**.

¹¹ The four means of valid knowledge described by Nyāya can be illustrated in a simple example: to know that it was raining one could have directly seen it rain oneself (direct sensory perception); one could look outside and see streets wet (intellectual inference); one could get a more precise idea about when and how strong it was raining by comparing previous knowledge or experience with the present situation (comparison which requires intellectual analysis and memory); and one could take someone's word for it (testimony).

The **pars lateralis** connects the superior colliculus and the temporal cortex with areas 17, 18, and 19 of the cortex and areas of the temporal cortex. These areas are involved in such functions as vision, hearing, memory and language. Together they are at the basis of the process of **inference**. In making a conclusion about something, we use our perception, which we analyse from the perspective of what we already know (memory) and express it or conceptualise a thought about it (functions which are fulfilled by the language areas of the brain). The pars lateralis therefore fulfills the role of inference.

The **pars oralis** connects the parietal cortical areas back with other parietal cortical areas. It is responsible for polymodal sensory integration. The parietal cortex and particularly the angular gyrus and supramarginal gyrus within it, compare and integrate sensory information. The pars oralis thus gives a higher order perception about sensory inputs in relation one with the other, allowing holistic perception and the perception of shape, motion, relative size and position. It serves the function of **comparison**.

The **pars medialis** connects the temporal cortex with the superior temporal gyrus and is responsible for memory, language, and speech. This is the basis of **verbal testimony** described in Nyāya. Verbal testimony supposes that one has known something (memory) and expresses it orally (language and speech).

2. *Prameya*

The second category or topic of Nyāya is called ‘Prameya’, or the ‘**object of valid knowledge**’. It corresponds to the second nuclear group of the thalamus called the **lateral geniculate body**. The lateral geniculate body connects the retinal ganglion cells through the optic nerve and the optic tract with area 17 of the visual cortex and is responsible for vision. In the process of acquiring knowledge, the simple, unbiased identification of an object requires a simple, unaltered and innocent perception of that object. This is fulfilled through the lateral geniculate body of the thalamus.

3. *Samshaya*

The third category or topic of Nyāya is called ‘Samshaya’, or ‘**Doubt**’. It corresponds to the **lateral dorsal nucleus** of the thalamus. The lateral dorsal nucleus connects the cingulate gyrus back with other parts of the cingulate gyrus and the supralimbic cortex of the parietal lobe. It is responsible for emotional expression. As just discussed above, the parietal lobe plays an important role in polymodal sensory integration and comparison. The process of rational decision-making supposes an objective assessment of a situation or an object. In contrast, the cingulate gyrus—the cortical component of the limbic system—is the seat of instincts, emotions, previous impressions and desires. This is an area of the nervous system that is prone to create fluctuations in feelings and belief, and the colouring of perception (such as the perception of friend versus foe). The lateral dorsal nucleus of the thalamus, which connects these areas together, can be considered as the seat of doubt.

4. *Prayojana*

The fourth category or topic of Nyāya is called ‘Prayojana’, or ‘**purpose**’. It corresponds to the **ventral anterior nucleus** of the

thalamus. The ventral anterior nucleus connects the globus pallidus (which corresponds to Guru in Jyotish—see section 12 of Chapter IV) with the premotor cortex (area 6) and the frontal cortex. These brain areas are responsible for higher order control, planning and execution of complex strategies. Planning and execution of complex strategies presupposes that a goal is constantly in the awareness at every step of thinking. An action whose individual steps lead to a specific goal is a purposeful action. The goal or purpose link together different aspects of plans or strategies. The purpose is lively at every step of the execution of the plan. Without a purpose, action is erratic and cannot be considered as part of a plan or strategy. This is how the concept of purpose emerges as the essential part of the function of the ventral anterior nucleus of the thalamus.

5. *Dṛishṭānta*

The fifth category or topic of Nyāya is called 'Dṛishṭānta', or '**example**'. It corresponds to the **anterior nuclear group** of the thalamus. The anterior nuclear group connects the mammillary body with the cingulate gyrus and the entorhinal cortex—involved in emotions and memory. Learning by precept or example involves a subtle emotional association of memory with a set of behavioural patterns, thought processes, customs and traditions. The function of example is thus fulfilled by the brain areas connected through the anterior nuclear group of the thalamus.

6. *Siddhānta*

The sixth category or topic of Nyāya is called 'Siddhānta', or '**established principle**'. It corresponds to the **medial geniculate nucleus** of the thalamus. The medial geniculate nucleus connects the inferior colliculus with the auditory cortex of the temporal lobe (areas 41 and 42) which is responsible for hearing. In the Vedic tradition, all established principles—all knowledge—are contained in the sounds of Veda and Vedic literature, which is referred to as Shruti. Shruti means 'that which is heard'. As discussed in Chapters I-IV, Natural Law which represents all 'established principles', expresses itself in a verbal form in Veda and the Vedic literature. In all traditions, the Law or 'established principles' usually have been given from generation to generation orally. This is how the medial geniculate nucleus whose primary function is hearing corresponds to this aspect of Nyāya.

7. *Avayava*

The seventh category or topic of Nyāya is called 'Avayava', or the '**parts of a logical argument**'. It corresponds to the **centromedian nucleus** of the thalamus. The centromedian nucleus connects the globus pallidus and other cortical areas with the frontal lobe, the caudate, and putamen, as well as diffuse areas of the cortex. It is associated with cognitive functions and motor control.

Logic

Human intellect follows a pattern of reasoning called logic. This pattern is structured by Natural Law. The discovery described in this book shows that this intelligent pattern is also found in the physical expression of Natural Law available in the human physiology and in the universe. The structure of matter and the structure of human thought are the same. That is why humans can

evolve purely logical sciences such as mathematics, can create 'logical' statements and theories that are scientifically verifiable in the physical world; from the broadest perspective, that is why humans can make sense out of the universe. The real meaning of Logic is: the progression of thought according to Natural Law. Anything that deviates from Natural Law can be considered illogical because it is not sensible or reasonable to think or act in a way that is contrary to the evolutionary power of Natural Law. Violation of Natural Law refers to thought and action that lead to problems, pain, and suffering. That which is logical ought to be reasonable, rational, according to common sense, and evolutionary, i.e., according to Natural Law. Natural Law is purposeful in its evolutionary power.

The globus pallidus and the frontal lobe, which are part of the inputs and outputs of the centromedian nucleus, have been connected with the concept of purpose, as described above in the fourth category of Nyāya. The centromedian nucleus also connects to the putamen, caudate nucleus and other broad cortical areas. These structures have been associated physiologically with the ability to change behavioural sets, the aspects of memory concerned with orientation, and a variety of cognitive functions. Lesions in these areas lead to absent-mindedness, clumsiness, speech disturbance, the deterioration of cognitive function and the loss of the ability to reason. All of these aspects are clearly related to the ability to present, understand, and elucidate logical arguments. The broad connectivity of the centromedian nucleus allows it to be connected with a wide variety of information centers in the brain. This means that different aspects or parts of a situation, object, or concept can be taken into consideration during the process of presenting logical arguments.

8. *Tarka*

The eighth category or topic of Nyāya is called 'Tarka', or '**process of reasoning**'. It corresponds to the reticular nucleus of the thalamus. The **reticular nucleus** connects the cerebral cortex and the brain stem with other thalamic nuclei. It also interconnects the thalamic nuclei one with the other. It has itself no outputs to the cortex. It is responsible for sampling, integrating and 'gating' the activity of the thalamic neurons. The reticular nucleus acts like a conductor of an orchestra with respect to the different thalamic nuclei. It does not itself produce an output to the cortex but it orchestrates the outputs and inputs of the other thalamic nuclei. It has organizing and integrating qualities which allow the process of reasoning to be adequately performed.

9. *Nirṇaya*

The ninth category or topic of Nyāya is called 'Nirṇaya', or '**art of drawing conclusions**'. It corresponds to the **intralaminar nuclear group** of the thalamus. The intralaminar nuclear group connects the reticular formation and the spino-thalamic tract with the basal ganglia and cortex. It is a sensory-motor thalamic pacemaker controlling the electro-cortical activity. This part of the thalamus activates and inhibits specific areas of the brain as necessary. It initiates and terminates at the appropriate times, the processes of analyzing, synthesizing, pondering, considering, etc. It allows the sequential steps of evolution of

thought and cognition to unfold on the basis of conclusions drawn about the already processed information. This is the art of drawing conclusion.

10. *Vāda*

The tenth category or topic of Nyāya is called 'Vāda', or '**discussion**'. It corresponds to the **lateral posterior nucleus** of the thalamus. The lateral posterior nucleus receives inputs from the parietal lobe and sends outputs back to the parietal lobe in particular to Broadman areas 5 and 7 responsible for the integration of polymodal sensory inputs. Discussion is a process of putting forward different views and assessing aspects of an argument from various angles. This corresponds to the activity of the lateral posterior nucleus.

11. *Jalpa*

The eleventh category or topic of Nyāya is called 'Jalpa', or '**polemics**'. It corresponds to the **ventral lateral nucleus** of the thalamus. The ventral lateral nucleus connects the dentate nucleus of cerebellum through the brachium conjunctivum (superior cerebellar peduncle) with the motor and premotor cortex. It is responsible for motor steadiness. Lesions of this nucleus cause tremor, delay in initiation and termination of movement, and lack of coordination. These are aspects related to polemics.

12. *Vitaṇḍa*

The twelfth category or topic of Nyāya is called 'Vitaṇḍa', or '**cavil**'. It corresponds to the **ventral postero-medial nucleus** of the thalamus. The ventral posterior medial connects the sensory nuclei of the trigeminal nerve (V) with the somatic sensory cortex of the parietal lobe. It is responsible for the somatic sensation in the face, including touch, pain, and temperature. The face is a delicate and intimate part of the body. Touching it or inflicting pain on it has a strong symbolism which can be associated with cavil.

Cavil involves the process of diminishing the dignity of the other. It includes an attitude of condescension, and can be considered insulting. Attempting to convince through touching or slapping the face is considered disrespectful and insulting. This is how the ventral postero-medial nucleus is connected to this topic of Nyāya. It is interesting in this regard to note how certain patterns of behaviour and even forms of language such as 'a slap to the face' have a consistent, strong and cross-culturally valid emotional, mental, abstract, and symbolic meanings. This is because mental realities and notions have their physical, physiological and behavioural counterparts (see also section 15 below).

13. *Hetvābhāsa*

The thirteenth category or topic of Nyāya is called 'Hetvābhāsa', or '**fallacies**'. It has five subdivisions: (a) Savyabhichāra or the **inconclusive**, (b) Viruddha or the **contradictory**, (c) Prakaraṇasama or the **equivalent to the question**, (d) Sādhyasama or the **unproved**, and (e) Kālātīta or the **belated**.

The thirteenth nuclear group of the thalamus called the **midline nuclei** corresponds to this thirteenth category of Nyāya. It also has five subdivisions: (a) **paraventricular**, (b) **central nuclear complex**, (c) **nucleus reuniens**, (d) **small nuclear**

group 1, and (e) small nuclear group 2.

All of these subdivisions of the midline nuclei have inputs from the reticular formation, hypothalamus and amygdaloid complex and send outputs to the basal forebrain, the amygdaloid complex, the cingulate gyrus, and the hypothalamus. They are involved in diffuse functions, in particular limbic functions, and emotions. The diffuse and emotional aspects of the function of this nuclear group, as well as its structure, correlate it with this category of Nyāya.

14. Chhala

The fourteenth category or topic of Nyāya is called ‘Chhala’ or ‘**equivocation**’. It has three subdivisions: (a) Vāk-chhala or **verbal**, (b) Sāmānyachhala or **generalizing**, and (c) Upachārachhala or **figurative**.

The fourteenth nuclear group of the thalamus, called the **medial dorsal**, corresponds to this fourteenth category of Nyāya. It also has three subdivisions: (a) **parvicellular**, (b) **magnocellular**, and (c) **paralaminar**.

The medial dorsal nucleus as a whole connects parts of the limbic system with the frontal cortex, particularly with the prefrontal areas. These areas are associated with emotions, imagination, anticipation of the future and prognostication. They are areas that carry an intuitive, speculative type of function when things can have a double or dubious meaning. This fits well with the concept of equivocation.

The **parvicellular** portion connects areas of the frontal cortex back with themselves (feedback) and with other areas of the frontal cortex. It is associated with language and speech. This is the basis of **verbal** expression, considered within the general area of equivocation.

The **magnocellular** portion connects the temporal cortex, amygdala and orbito-frontal cortex back with themselves and with each other. It is associated with general feelings, emotions, and memory as well as a number of diverse functions. It fulfills the quality of **generalizing** in this aspect of Nyāya.

The **paralaminar** portion interconnects the cortical Broadman area eight, associated with the frontal eye field, and the pars reticulata of the substantia nigra. Its function is related to vision and eye field. In the context of this category of Nyāya, it represents the **figurative** aspect of equivocation.

15. Jāti

The fifteenth category or topic of Nyāya is called ‘Jāti’, or ‘**futile argument**’. It corresponds to the **ventral postero-lateral** nucleus of the thalamus. The ventral postero-lateral nucleus connects the dorsal column-medial lemniscal pathways and spino-thalamic pathways with the somatic sensory cortex of the parietal lobe. It is responsible for somatic sensation in the body, including touch, pain, and temperature. This aspect of Nyāya and the thalamus is similar to the twelfth category discussed above except that the sensations are conveyed from the body.

A futile argument is an argument which does not use proper logic and reasoning. It

does not appeal to the intellect. Attempting to convince by using physical sensations through touch such as tapping someone on the back, giving sensory satisfaction, or inflicting pain to the body to create fear and pressure are not satisfactory to the intellect. They can be considered as vain and futile. This is how the ventral postero-lateral nucleus is connected to this topic of Nyāya. It is interesting to note, as mentioned in section 12 above, how certain patterns of behaviour, such as putting one's arm around somebody's shoulders or shaking hands have an emotional, mental, abstract, and symbolic meaning. This is because mental concepts have their physical, physiological and behavioural counterparts.

16. *Nigrahassthāna*

The sixteenth and last category or topic of Nyāya is called 'Nigrahassthāna', or '**disagreement on first principles**'. It corresponds to the last nucleus of the thalamus—the **ventral intermedial** nucleus. The inputs to the ventral intermedial nucleus are not understood. It has outputs to the somatic sensory areas of the cortex.

The term Nigrahassthāna can be divided into two words: nigrāha and sthāna. They refer to duality of perception that includes simultaneously two opposite values. This category concludes the topic of Nyāya by acknowledging the dual nature of reality—specificity and generality.

12 Quote from 'Maharishi's Absolute Theory of Government', MVU Press, page 449:

'There are seven states of consciousness: Waking (Jāgrat Avasthā or Jāgrat Chetanā), Dreaming (Swapn Avasthā or Swapn Chetanā), Sleeping (Sushupti Avasthā or Sushupti Chetanā), Transcendental Consciousness (Turīya Avasthā or Turīya Chetanā), Cosmic Consciousness (Turīyātīt Avasthā or Turīyātīt Chetanā), God Consciousness (Bhagavad Chetanā), and Unity Consciousness (Brāhmī Sthiti or Brāhmī Chetanā).

From research studies on the seven states of consciousness we know that each state of consciousness has its corresponding physiology.

- Waking State of Consciousness has its own corresponding state of physiology;
- Dreaming State of Consciousness has its own corresponding state of physiology;
- Sleep State of Consciousness has its own corresponding state of physiology;
- Transcendental Consciousness has its own corresponding state of physiology;
- Cosmic Consciousness has its own corresponding state of physiology;
- God Consciousness has its own corresponding state of physiology;
- Unity Consciousness has its own corresponding state of physiology.

Scientific research has established that the structure and functions of all the thirty-seven areas of physiology are the exact replica of the structures and functions of Rk Veda and the Vedic Literature—the sounds of the Veda and Vedic Literature. When we know that every state of consciousness has its own physiology, then we know that the waking state of physiology has at its basis a quality of intelligence which is different from the quality of intelligence of the dreaming, sleeping, or other states of consciousness.

This means that physiologically, mentally, intellectually, and spiritually (with reference to the Self), life is different in different states of consciousness. This means from zero level of awareness, zero level of intelligence (sleep state), to the infinite, unbounded level of the fully awake, fully alert state of consciousness (self-referral Unity Consciousness), the physiological structure and function are different.

From this level of understanding it is clear that intelligence functions within the body in a very natural way, regulating the physiological functions and establishing corresponding behavioural patterns.

This means that the body of any individual is being regulated by a specific quality of intelligence. The physiology of everyone is regulated by its inner intelligence; and even though all men as men are all the same, the fact remains that no two men are really the same. Physiologically, or with reference to his inner intelligence, every individual is uniquely different from every other; this is the story of the individual right from his birth to the whole span of his evolution.'

16 Nuclei of the Thalamus

	Location in the thalamus	16 Nuclei of the thalamus and subdivisions to consider	Meaning of each category and sub-category of Nyāya
1		Pulvinar 1) Pars inferior 2) Pars lateralis 3) Pars oralis 4) Medial pulvinar	Means of valid knowledge 1) Perception 2) Inference 3) Comparison 4) Verbal testimony
2		Lateral geniculate body	Object of valid knowledge
3		Lateral dorsal	Doubt
4		Ventral anterior	Purpose
5		Anterior nuclear group	Example
6		Medial geniculate	Established principle
7		Centromedian	Parts of a logical argument
8		Reticular nucleus	Process of reasoning
9		Intralaminar	Art of drawing conclusions
10		Lateral posterior	Discussion
11		Ventral lateral	Polemics
12		Ventral postero-medial	Cavil
13		Midline nuclei 1) Paraventricular 2) Central nuclear complex 3) Nucleus reuniens 4) Small nuclear group 1 5) Small nuclear group 2	Fallacies 1) The inconclusive 2) The contradictory 3) The equivalent to the question 4) The unproved 5) The belated
14		Medial dorsal 1) Parvocellular portion (PC) 2) Magnocellular portion (MC) 3) Paralamina portion (PL)	Equivocation 1) Verbal 2) Generalizing 3) Figurative
15		Ventral postero-lateral	Futile argument
16		Ventral intermedial	Disagreement on first principles

Thalamus

and their Anatomic Locations

Sanskrit names of the 16 categories of Nyāya		
प्रमाणा (Pramāṇa)	प्रत्यक्ष अनुमान उपमान शब्द	Pratyaksha Anumāna Upamāna Shabda
प्रमेय (Prameya)		
संशय (Saṁshaya)		
प्रयोजन (Prayojana)		
दृष्टान्त (Dṛiṣṭānta)		
सिद्धान्त (Siddhānta)		
अवयव (Avayava)		
तर्क (Tarka)		
निर्णय (Nirṇaya)		
वाद (Vāda)		
जल्प (Jalpa)		
वितण्डा (Vitaṇḍā)		
हेत्वाभास (Hetvābhāsa)	सव्यभिचार विरुद्ध प्रकरणासम साध्यसम कालान्ति	Savyabhichāra Viruddha Prakaraṇasama Sādhyasama Kālatita
छल (Chhala)	वाक्छल सामान्यछल उपचारछल	Vāk-chhala Sāmānyachhala Upachārachhala
जाति (Jāti)		
निग्रहस्थान (Nigrahasthāna)		

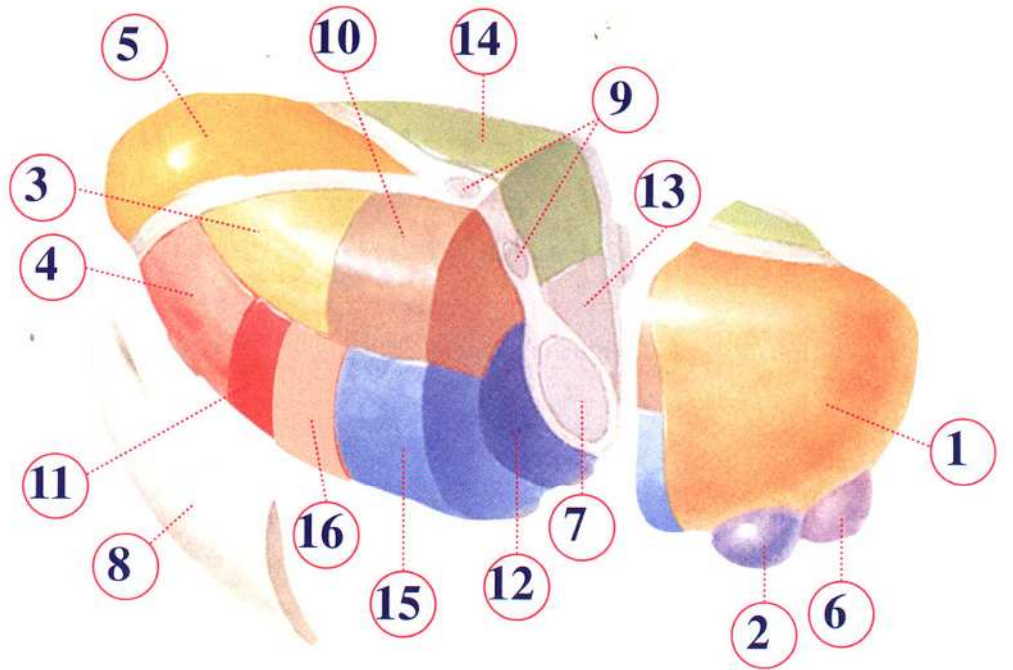


Figure 54 lists the Sanskrit names of the 16 categories of Nyāya with their transliteration (column on the right). The names of the corresponding nuclei of the thalamus and their anatomic location in the thalamus are shown in the two columns to the left. The right side of the figure shows a view of the part of the thalamus located in the right hemisphere of the brain and the numbers associated with each subdivision of the thalamus on this drawing refer to the corresponding category of Nyāya.

16 Nuclei of the Thalamu




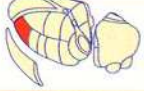












	Nuclei	Nyāya	Location in Anatomy
1	Pulvinar (4 divisions): 1) Pars inferior 2) Pars lateralis 3) Pars oralis 4) Medial pulvinar	Means of Valid Knowledge (Pramāṇa): 1) Perception (Pratyaksha) 2) Inference (Anumāna) 3) Comparison (Upamāna) 4) Verbal testimony (Shabda)	
2	Lateral geniculate	Object of Valid Knowledge (Prameya)	
3	Lateral dorsal	Doubt (Saṁshaya)	
4	Ventral anterior	Purpose (Prayojana)	
5	Anterior nuclear group	Example (Dṛishṭānta)	
6	Medial geniculate	Established Principle (Siddhānta)	
7	Centromedian	Parts of Logical Argument (Avayava)	
8	Reticular nucleus	Process of Reasoning (Tarka)	
9	Intralaminar	Art of Drawing Conclusion (Nirṇaya)	
10	Lateral posterior	Discussion (Vāda)	
11	Ventral lateral	Polemics (Jalpa)	
12	Ventral posterior medial	Cavil (Vitaṇḍā)	
13	Midline nuclei: 1) Paraventricular 2) Central nuclear complex 3) Nucleus reuniens 4) Small nuclear group 1 4) Small nuclear group 2	Fallacies (Hetvābhāsa): 1) The inconclusive (Savyabhichāra) 2) The contradictory (Viruddha) 3) The equivalent to the question (Prakaraṇasama) 4) The unproved (Sādhyasama) 5) The belated (Kālātita)	
14	Medial dorsal: 1) Parvicellular portion (PC) 2) Magnocellular portion (MC) 3) Paralamellar portion (PL)	Equivocation (Chhala): 1) Verbal (Vāk-chhala) 2) Generalizing (Sāmānyachhala) 3) Figurative (Upachārachhala)	
15	Ventral posterior lateral	Futile Argument (Jāti)	
16	Ventral intermedial	Disagreement on First Principles (Nigrahasthāna)	

Figure 55. This table shows how, through their precise connectivities in the nervous system and

Thalamus and their Functions

Main Sources of Input	Major Output Sites	Physiological Function
Superior colliculus, temporal, parietal, and occipital lobes: 1) Superior colliculus 2) Superior colliculus and temporal cortex 3) Parietal cortex 4) Temporal cortex	Temporal, parietal, and occipital lobes: 1) Areas 17, 18, 19 2) Areas 17, 18, 19 and temporal 3) Parietal 4) Superior temporal gyres	Integration of sensory information, visual attention and conscious awareness: 1) Higher order visual integration 2) Vision, memory, and language 3) Polymodal sensory integration 4) Language, speech
Retinal ganglion cells through optic nerve and optic tract	Visual cortex (area 17)	Vision
Cingulate gyrus	Cingulate gyrus—supralimbic cortex of parietal lobe	Emotional expression
Globus pallidus	Premotor cortex (area 6)—frontal cortex	Higher order control: planning and execution of complex strategies
Mammillary body of hypothalamus	Cingulate gyrus—entorhinal cortex	Limbic—memory storage
Inferior colliculus through brachium of inferior colliculus	Auditory cortex of temporal lobe (areas 41 and 42)	Hearing
Globus pallidus, and cortical areas	Several cortical areas, frontal lobe, caudate and putamen	Cognitive functions and motor control
Cerebral cortex and thalamic nuclei, brain stem	Thalamic nuclei (no cortical projection)	Sample, integrate and 'gate' activity of thalamic neurons
Reticular formation, spinothalamic tract	Basal ganglia and cortex	Sensory-motor thalamic pace-maker controlling electrocortical activity
Parietal lobe	Parietal lobe (areas 5 and 7)	Integration of polymodal sensory inputs
Dentate nucleus of cerebellum through brachium conjunctivum (superior cerebellar peduncle)	Motor and premotor	Motor steadiness lesions cause tremor, delay in initiation and termination of movement and lack of co-ordination
Sensory nuclei of trigeminal nerve (V)	Somatic sensory cortex of parietal lobe	Somatic sensation (face) including touch, pain, and temperature
Reticular formation and hypothalamus, amygdaloid complex	Basal forebrain (amygdaloid complex)—cingulate gyrus, hypothalamus	Limbic—emotions, diffuse function
Amygdaloid nuclear complex, olfactory, and hypothalamus: 1) Frontal cortex 2) Amygdala, temporal cortex, orbito-frontal cortex 3) Area 8 (frontal eye field), pars reticulata of substantia nigra	Prefrontal Cortex: 1) Frontal cortex 2) Amygdala, temporal cortex, orbito-frontal cortex 3) Area 8 (frontal eye field), pars reticulata of substantia nigra	Limbic: 1) Speech, motor language 2) General, feelings, emotions, memory 3) Vision
Dorsal column-medial lemniscal pathways and spinothalamic pathways	Somatic sensory cortex of parietal lobe	Somatic sensation (body) including touch, pain, and temperature
Inputs not understood	SSII—Somatic sensory	Not understood

their function, the 16 nuclei of the thalamus correspond to the 16 categories of Nyāya.

14. VAISHESHIKA: Cerebellum

Vaisheshika represents that quality of consciousness which appreciates a specific quality of consciousness as a wave within the unbounded ocean of consciousness. It has a predominantly Devatā quality. This **specifying** quality of Vaisheshika is elaborated in one book with 10 chapters, 20 divisions, and 370 Sūtras.

The Cerebellum

In the physiology, Vaisheshika is that quality which is able to see facts and specific values within the whole range of possibilities. It compares specific performance with intention. The cerebellum fulfils that function. For example, the cerebellum receives information about plans for movement from brain structures concerned with the programming and execution of movement; and also monitors control signals to spinal motor neurons from collaterals of interneurons that integrate descending and peripheral information in the spinal cord. This type of feedback information is called corollary discharge, or internal feedback. The cerebellum also receives information about motor performance from sensory feedback arising in the periphery during the course of movement. This type of information is called reafference, or external feedback.

These internal and external feedback signals allow the cerebellum to compare central information corresponding to the intended goal or to a desired trajectory, with the actual motor response.

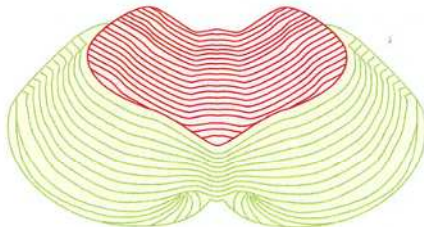
Therefore, the cerebellum, seeing the goal and **specifying** performance, fulfils the description of Vaisheshika.

There is one book of Vaisheshika with 10 chapters of two divisions each, totaling 20 divisions with a total of 370 Sūtras. The cerebellum is one anatomical entity with 10 distinct compartments of two divisions each (right and left lobes), adding up to 20 divisions. The cerebellum has about 370 small gyri, or folds, which correspond to the Sūtras of Vaisheshika.

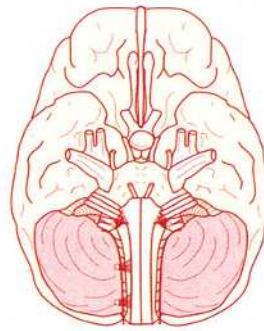
The ability of Vaisheshika to process and describe specific values as waves within the unbounded ocean of consciousness gives it a quality of Devatā. Figure 56 shows the correspondence of the different aspects of Vaisheshika with the cerebellum.

The essence of the specific aspects of Vaisheshika are described in the fourth Sūtra of Vaisheshika which says: 'Dravya, Guṇa, Karma, Sāmānya, Vishesha, Samavāya'. Dravya is substance, Guṇa is property, Karma is action, Sāmānya is what is common. Vishesha is specific and Samavāya is how things are aggregated or collected together.

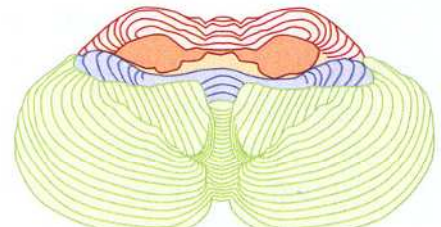
VAISHESHIKA: Cerebellum



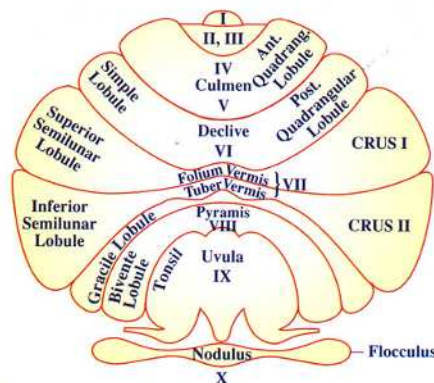
Posterior (back) view of the cerebellum showing some of the 370 folds corresponding to the 370 Sūtras of Vaisheshika



Bottom view of the brain showing the cerebellum



Anterior (front) view of the cerebellum showing some of the 370 folds corresponding to the 370 Sūtras of Vaisheshika



Schematic drawing of the unfolded cerebellum showing both anterior and posterior views and the 10 lobules with the right and left divisions corresponding to the 10 chapters and 20 divisions of Vaisheshika

The 10 chapters of Vaisheshika shown in the 10 lobules of the cerebellum					
Anatomic Name	Location in Anatomy	Chapter of Vaisheshika			
5 Inferior Semilunar Lobule		पञ्चमोऽध्यायः Panchamodhyāyah 18+26=44	10 Lingula		दशमोऽध्यायः Dashamodhyāyah 07+09=16
4 Gracile Lobule		चतुर्थोऽध्यायः Chaturthodhyāyah 13+11=24	9 Central Lobule		नवमोऽध्यायः Navamodhyāyah 15+13=28
3 Biventer Lobule		तृतीयोऽध्यायः Tritiyodhyāyah 19+21=40	8 Anterior Quadrangular Lobule		अष्टमोऽध्यायः Ashtamodhyāyah 11+06=17
2 Tonsil		द्वितीयोऽध्यायः Dvitiyodhyāyah 31+37=68	7 Simple Lobule		सप्तमोऽध्यायः Saptamodhyāyah 25+28=53
1 Flocculonodular Lobe		प्रथमोऽध्यायः Prathamodhyāyah 31+17=48	6 Superior Semilunar Lobule		षष्ठोऽध्यायः Shashthodhyāyah 16+16=32

Figure 56 shows how the 10 lobules of the cerebellum correspond to the 10 chapters of Vaisheshika with 2 divisions each, comprising a total of 370 Sūtras relating to the approximately 370 small gyri of the cerebellum.

The specific activities of the cerebellum are integrated and defined through the neuronal connections in the grey matter, concentrated in the deep cerebellar nuclei. They are three on each side, making a total of six corresponding to the above-listed six values of Vaisheshika. They are the dentate nucleus, the fastigial nucleus, and nucleus interpositus.

The fifth Sūtra of Vaisheshika defines nine qualities: Prithivī, Āpas, Tej, Vāyu, Ākāśh, Kāl, Dig, Ātmā, and Manas. These constitute earth, water, fire, air, space, and the values of time, direction, self, and mind. It is interesting that the nuclei mentioned above, which are six in lower mammals, become clearly separated into eight nuclei in higher mammals. In humans, the nuclei are two dentate nuclei, two fastigial nuclei, two emboliform nuclei, and two globose nuclei making a total of eight. In addition, the cerebellar cortex represents another major grey matter of the cerebellum.

In its function, the cerebellum integrates the human body's position in space (Akāśh) with the timing (Kāl) of movement and the direction (Dig) of movement in relation to the individual's inner awareness (Ātmā) of his position and his mental (Manas) intentions.

There are three layers in the cerebellar cortex (molecular, purkinje, and granular). They correspond to Ṛishi, Devatā, and Chhandas. The cerebellar cortex is the centre of activity of the eight deep nuclei. Each of these eight nuclei therefore perceives three values from the cortex. This makes $3 \times 8 = 24$ values. The sixth Sūtra of Vaisheshika defines 24 types of Karmas (activities). They correspond to these 24 values.

15. SĀM̐KHYA: Neuronal Activity

Sāmkhya represents that quality of consciousness that creates numbers (**enumerating** the diverse aspects) within the numberless quality of consciousness. It has a predominantly Chhandas quality. There are six books in Sāmkhya with 25 basic values.

*Dendrites,
Cell Bodies,
and Axons
and their
Connectivities*

In the physiology, Sāmkhya is represented by the neuronal activity of dendrites, cell bodies, and axons and their connectivities. The abstract, numberless realities of perception, awareness, feeling, emotion, consciousness, behaviour, etc. experienced through the nervous system are perceived through neuronal activity by means

of **numbers**.

At the neuronal level, every experience reduces to a set of numbers. The firing or silencing of a neuron depends on the addition of a specific number of excitatory and inhibitory inputs. It is the number of neuronal firings that, in different combinations, determines the information to be carried to the next synaptic gaps, which in turn determines what the next step will be. It is the number of receptors and the number of activated receptors that induce specific responses of any cell in the body and determine what information is relayed to the DNA. These numbers thus control and modulate the activities of the whole physiology.

We could say that specific combinations of specific numbers allow us to have experiences that are beyond numbers: to see flowers, hear and appreciate music, feel and think about happiness, love, compassion, enlightenment, and the whole range of human experience.

*Relationship
of the Human
Physiology
and the Vedic
Literature*

All of these experiences can be summarized in the 25 basic values described in Sāmkhya: Purusha, Prakṛiti, Māhat, Ahaṁkāra, Manas, five Karmendriyas, five Gyānendriyas, five Tanmātras, and five Mahābhūtas. They are 25 sets of possible channels of experience. They correspond respectively to the following functions of the physiology: Purusha relates to all that allows the experience of pure, holistic Self. Prakṛiti is the nature of the Self. Māhat allows broad expanded thinking, one's mind in tune with the collective or cosmic mind. Ahaṁkāra is the sense of 'I-ness', individuality. Manas is individual mind. The five Karmendriyas refer to neuronal activity modulating action. They are divided into five groups, pertaining to the following organs of action: 1) tongue (speech), 2) hands, 3) feet, 4) excretion, 5) reproduction. The five Gyānendriyas refer to the five modalities of sensation: 1) hearing, 2) touch, 3) sight, 4) taste, 5) smell. The five Tanmātras are the five principles underlying all material expressions: 1) space (emptiness), 2) gaseous state, 3) heat

and light, 4) fluidity, 5) solidity. The five Mahābhūtas are space, air, fire, water, and earth. The five Tanmātras and the five Mahābhūtas together can be seen to refer to the various metabolic, lymphatic, and endocrine processes, and all that maintains the constancy of the internal milieu. They include, for example, the osmolarity of the body fluid (water element), the concentration of O_2 and CO_2 (gas element), and the activity of the metabolic enzymes (fire element).

It is the interactions of different proportions of these 25 elements that determine all action and experience. The ability to see wholeness on the basis of numbers resides within the cerebral cortex (see Figure 57). The cortex has six layers that correspond to the six chapters of Sāṃkhya (see Figure 58).

Whereas the holistic experience is lively, it is hidden by and within Sāṃkhya through numbers. Sāṃkhya has a predominantly Chhandas quality because, in its emphasis on numbers, it is as if it hides the whole which is more than the sum of the parts.

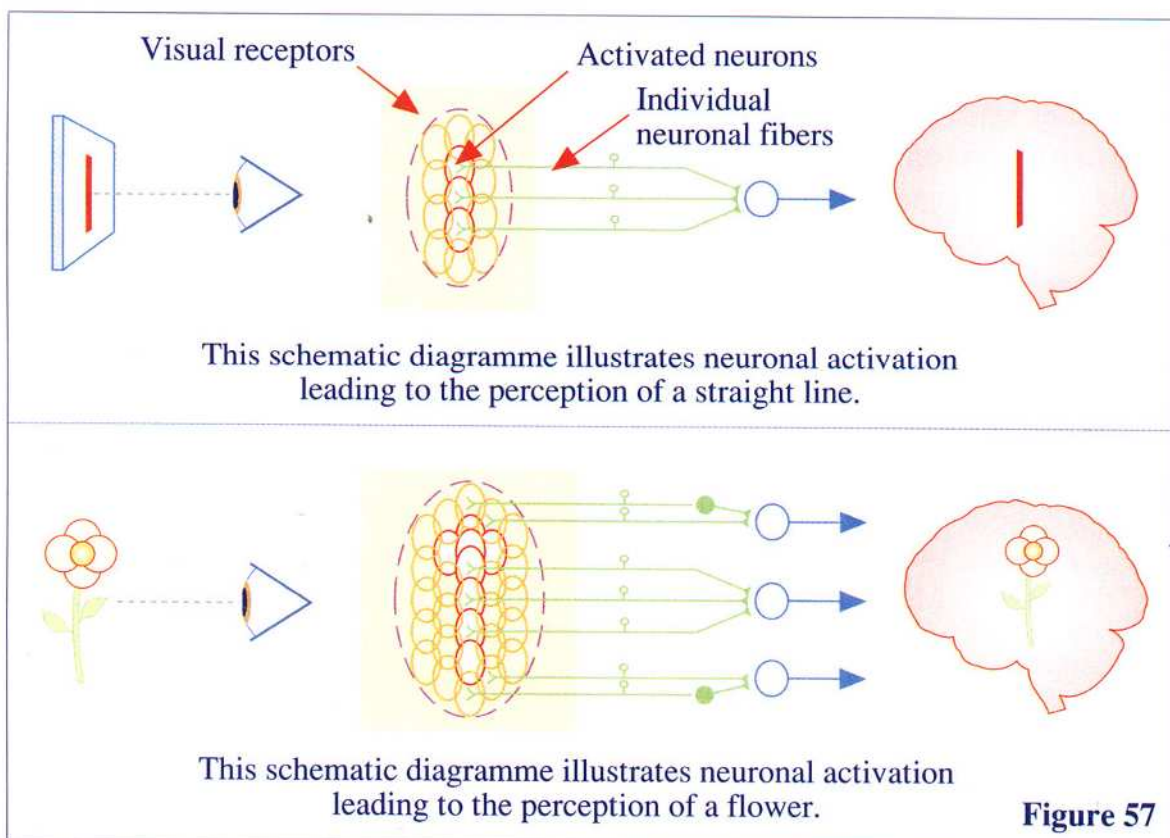
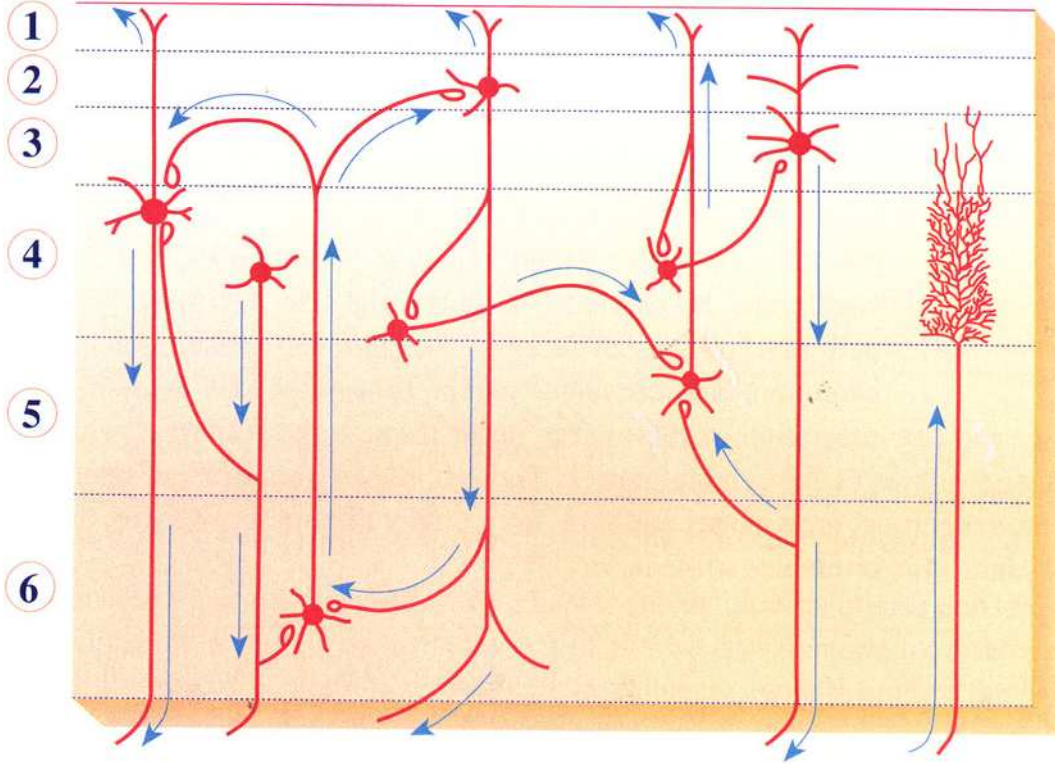


Figure 57 illustrates how the experience of an object depends on which neurons are activated and in what number. The numberless object is perceived by means of a process of numbers. Sāṃkhya describes this process.

SĀMKHYA: Neuronal Activity

6 Layers of the Cerebral Cortex



6 Chapters of Sāmkhya

Chapter	First and last Sūtra of the chapter
1	अथ त्रिविधदुःखात्यन्तनिवृत्तिरत्यन्तपुरुषार्थः ॥१॥ Atha trividhaduḥkhātyantānivrīṭtiratyantapurushārthaḥ. उपरागात्कर्तृत्वं चित्सान्निध्याच्चित्सान्निध्यात् ॥१२६॥ Uparāgātkartṛtvaṁ chitsānnidhyāchchitsānnidhyāt.
2	विमुक्तमोक्षार्थं स्वार्थं वा प्रधानस्य ॥१॥ Vimuktamokshārtham swārtham vā pradhānasya. समानकर्मयोगे बुद्धेः प्राधान्यं लोकवल्लोकवत् ॥१७॥ Samānakarmayoge buddheḥ prādhānyam lokavallokaḥ.
3	अविशेषाद् विशेषारम्भः ॥१॥ Avisheshād visheshārambhaḥ. विवेकान्निःशेषदुःखनिवृत्तौ कृतकृत्यता नेतरान्नेतरात् ॥५४॥ Vivekānniḥsheshaduḥkhanivṛttau kṛitakṛityatā netarānnetarāt.

Chapter	First and last Sūtra of the chapter
4	राजपुत्रवत् तत्त्वोपदेशात् ॥१॥ Rājaputravat tattvopadeshāt. न भूतियोगेऽपि कृतकृत्यतोपास्यसिद्धिवदुपास्यसिद्धिवत् ॥३२॥ Na bhūtiyoge'pi kṛitakṛityatopāsyasiddhivadupāsyasiddhivat.
5	मंगलाचरणं शिष्टाचारात् फलदर्शनाच्छ्रुतितश्चेति ॥१॥ Mangalācharaṇam shishtāchārāt phaladarśanāchchhṛutitashcheti. न भूतचैतन्यं प्रत्येकादृष्टेः सांहत्येऽपि च सांहत्येऽपि च ॥५६॥ Na bhūtachaitanyam pratyekādṛishteḥ sāmhatye'pi cha sāmhatye'pi cha.
6	अस्त्यात्मा नास्तित्वसाधनाभावात् ॥१॥ Astyātmā nāstitvasādhanaābhāvāt. यद्वा तद्वा तदुच्छित्तिः पुरुषार्थस्तदुच्छित्तिः पुरुषार्थः ॥७०॥ Yadvā tadvā taduchchhittih purushārthastaduchchhittih purushārthaḥ.

Figure 58 shows the six chapters of Sāmkhya and their correspondence with the six layers of the cerebral cortex. The chapters are represented in the Sanskrit Sūtras shown below the picture. The various types of neuronal activity are illustrated in the figure by various incoming, integrating, and outgoing fibres with arrows, showing the direction of flow of information. These various types of neuronal activity can be classified into 25 categories corresponding to the 25 values of Sāmkhya. (See text for more elaboration.)

16. YOGA: Association Fibres

Yoga represents the unified and **unifying** quality of self-referral consciousness. It brings out the quality of unity and hides or covers diversity. As such, it has a Chhandas value. There is one book of Yoga, with four chapters of 51, 55, 55, and 34 Sūtras respectively.

In the physiology, Yoga is that quality which unifies differences; that quality which allows opposite values to be integrated and form a meaningful whole.

*The Association
Fibres of
the Cerebral
Cortex*

We live in a diversified universe. Our senses are constantly bombarded by millions of inputs and our physiology constantly performs millions of tasks to maintain its balance, integrity, and evolution. The conscious comprehension of this diversified complexity and the integration of differences occur through the **unifying** value of the association fibres of the cerebral cortex. These fibres are the axons of neurons located in the cortical grey matter and they form a very fine mesh, weaving the whole cortex into what resembles a fine fabric.

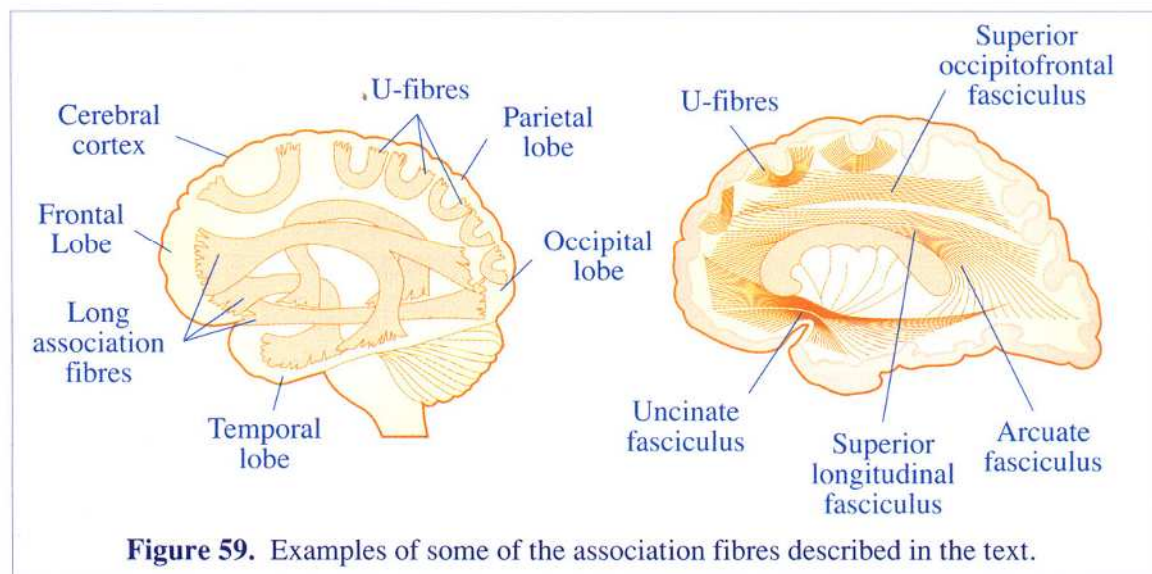


Figure 59. Examples of some of the association fibres described in the text.

The cortex is highly convoluted, with folds called gyri and grooves called sulci. The sets of association fibres connecting adjacent gyri are called U-fibres. They are anatomically identified on the basis of the folds of cortical gyri to which they connect. The longer association fibres are fasciculi ('bundles') and the fibres connecting the right brain with the left brain are the corpus callosum and anterior commissure (see Figure 59). The total number of association fibres can be divided into 195 sets. They correspond to the 195 Sūtras of Yoga.

Furthermore, the dimensions of the brain area and the length of the Sūtras also correspond to each other; so both the sequence of syllables of the Sūtras and the physical structures of the brain meaningfully and purposefully correspond to each other. Accordingly, we find that the longer Sūtras occupy a larger area of the cortex, as seen in Figures 60-67. For example, in Chapter one, Sūtras 1, 2, 3, 4, and 23 are short, and they occupy a short fold on the gyri of the brain. Sūtras 14, 15, 24, 30, and 41 are long, and they occupy a long fold on the gyri of the brain.

*Synthetic
and
Analytic*

A further correspondence is found in considering the functioning of the brain. The right side of the brain is understood to have a more general synthetic quality, while the left has a more analytic, specific quality. Study of the Yoga Sūtras suggests that some Sūtras focus on the specific values, while others focus on general values. More research is needed to look into this area of specificity and generality of the Yoga Sūtras and the functioning of the corresponding areas of the brain.

The grand theme of Nature is to connect the specificity of anything with the generality of the wholeness of totality. Everything in creation is connected with everything else, and everything is connected with the wholeness of totality.

It will be noted that the last Sūtra of a chapter stands as a summary, unifying the whole chapter. In a similar way, the last set of fibres corresponding to chapter one, for example, is the occipito-occipital corpus callosum, which unifies the entire activity of the right and left occipital lobes.

*Unification
and
Integration*

From the correspondence of the structure and function of the Yoga Sūtras and the association fibres of the cortex—both display the mechanisms of unification, integration, and co-ordination—we infer that the sounds generated by the sequential activity of the association fibres are the sequentially organized sounds which make a Sūtra—the sound of a Sūtra. Therefore, the unifying function of brain physiology is demonstrated in the frequencies of the sequentially placed syllables of each Sūtra.

We conclude that the repetition of the Sūtras will neutralize irregularities or imbalances in the physiology. Reading the Yoga Sūtras is nourishing and revitalizing. It is an exercise that maintains the vitality and strength of the structure and function of the association fibres, and leads to the integration of mind and body, of understanding and action. Integrated understanding, an integrated decision-making process, and integrated action means mistake-free action in accordance with Natural Law.

YOGA: Association Fibres

The cerebral cortex is divided into four lobes, named according to the overlying bones of the skull: occipital, frontal, parietal, and temporal lobes. These lobes correspond to Chapters 1–4 of the Yoga Sūtras respectively.

Four Chapters of Patanjali Yoga Sūtras

Location in Anatomy



I

समाधिपादः
Samādhi-Pādaḥ

Chapter 1
(Sūtra 1 - 51)

Occipital lobe

II

साधनपादः
Sādhana-Pādaḥ

Chapter 2
(Sūtra 52 - 106)

Frontal lobe

III

विभूतिपादः
Vibhūti-Pādaḥ

Chapter 3
(Sūtra 107 - 161)

**Parietal lobe
(including
Insula)**

IV

कैवल्यपादः
Kaivalya-Pādaḥ

Chapter 4
(Sūtra 162 - 195)

**Temporal lobe
(including
Limbic)**

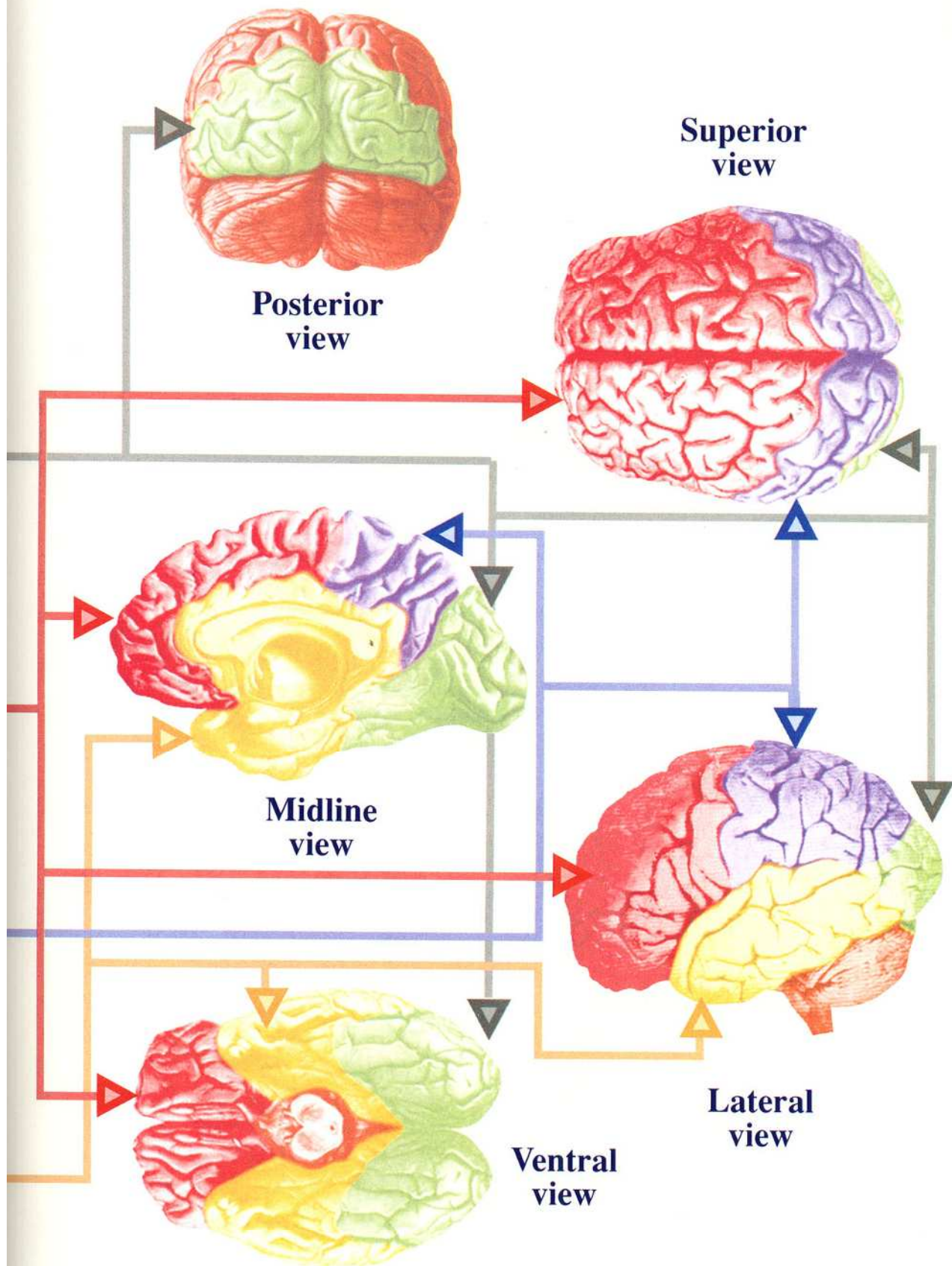


Figure 60 shows the four cortical lobes from different angles (views) and their corresponding chapters in Yoga.

YOGA: Association Fibres Yoga Sūtras - Chapter 1

Sanskrit text with transliteration	Location in anatomy
1 १ अथ योगानुशासनम् । Ath yogānushāsanam	— Calcarine Fissure Gyri: 1 R
2 २ योगश्चित्तवृत्तिनिरोधः । Yogashchittavrittinirodhah	— Calcarine Fissure Gyri: 1 L
3 ३ तदा द्रष्टुः स्वरूपेऽवस्थानम् । Tadā drashtuh svarūpe avasthānam	— Calcarine Fissure Gyri: 2 R
4 ४ वृत्तिसारूप्यमितरत्र । Vrittisārūpyam itaratr	— Calcarine Fissure Gyri: 2 L
5 ५ वृत्तयः पञ्चतयः क्लिष्टाक्लिष्टाः । Vrittayah panchatayah klišhtāh aklišhtāh	— Superior R Occipito-Frontal Fasciculus
6 ६ प्रमाणविपर्ययविकल्पनिद्रास्मृतयः । Pramāṇ viparyaya vikalp nidrā smritayah	— Superior L Occipito-Frontal Fasciculus
7 ७ प्रत्यक्षानुमानागमाः प्रमाणानि । Pratyakshānumānāgamāḥ pramānāni	— Calcarine Fissure Gyri: 3 R
8 ८ विपर्ययो मिथ्याज्ञानमतद्रूपप्रतिष्ठम् । Viparyayo mithyāgyānamatadrūp pratishtham	— Calcarine Fissure Gyri: 3 L



Figure 61 shows a posterior view of the brain with the locations of the chapters of Yoga and the Sūtras corresponding to each of the cortical gyri (folds).

YOGA: Association Fibres

Yoga Sūtras - Chapter 1 (cont.)

	Sanskrit text with transliteration	Location in anatomy
9	६ शब्दज्ञानानुपाती वस्तुशून्यो विकल्पः । Shabda gyānānupātī vastushūnyo vikalpah	— Calcarine Fissure Gyri: 4 R
10	१० अभावप्रत्ययालम्बना वृत्तिर्निद्रा । Abhāv pratyayālambanā vṛttir-nidrā	— Calcarine Fissure Gyri: 4 L
11	११ अनुभूतविषयासंप्रमोषः स्मृतिः । Anubhūt viśhayāsampramoshah smritih	— Lateral Occipital Gyrus: 1 R
12	१२ अभ्यासवैराग्याभ्यां तन्निरोधः । Abhyāsa vairāgyābhyām tannirodhah	— Lateral Occipital Gyrus: 1 L
13	१३ तत्र स्थितौ यत्नोऽभ्यासः । Tatra sthitau yatno'bhyāsah	— Lateral Occipital Gyrus: 2 R
14	१४ स तु दीर्घकालनैरन्तर्यसत्कारासेवितो दृढभूमिः । Sa tu dīrghakāl nairantarya satkārasevito dṛḍhabhūmih	— Lateral Occipital Gyrus: 2 L
15	१५ दृष्टानुश्रविकविषयवितृष्णास्य वशीकारसंज्ञा वैराग्यम् । Drishtānushravika viśhaya vitrishnasya vashīkārasamgyā vairāgyam	— Lateral Occipital Gyrus: 3 R
16	१६ तत्परं पुरुषस्यातेर्गुणवैतृष्ण्यम् । Tatparam purusha khyāter-guna vaitrishnyam	— Lateral Occipital Gyrus: 3 L
17	१७ वितर्कविचारानन्दास्मितारूपानुगमात् संप्रज्ञातः । Vitarka vichārānandāsmītārūpānugamāt sampragyātah	— Lateral Occipital Gyrus: 4 R
18	१८ विरामप्रत्ययाभ्यासपूर्वः संस्कारशेषोऽन्यः । Virāma pratyayābhyāsa pūrvah samskāraśesho'nyah	— Lateral Occipital Gyrus: 4 L
19	१९ भवप्रत्ययो विदेहप्रकृतिलयानाम् । Bhava pratyayo vidēha prakṛitilayānām	— Superior Lateral Occipital Gyrus: 1 R
20	२० श्रद्धावीर्यस्मृतिसमाधिप्रज्ञापूर्वक इतरेषाम् । Shraddhā vīrya smṛiti samādhi pragyā pūrvaka itareśhām	— Superior Lateral Occipital Gyrus: 1 L
21	२१ तीव्रसंवेगानामासन्नः । Tīvra samvegānām āsannah	— Superior Lateral Occipital Gyrus: 2 R
22	२२ मृदुमध्याधिमात्रत्वात्ततोऽपि विशेषः । Mṛidu madhyādhi mātratvāt tato'pi viśheshah	— Superior Lateral Occipital Gyrus: 2 L
23	२३ ईश्वरप्रणिधानाद्वा । Ishvara pranidhānādvā	— Superior Lateral Occipital Gyrus: 3 R
24	२४ क्लेशकर्मविपाकाशयैरपरामृष्टः पुरुषविशेष ईश्वरः । Klesha karma vipākāshayairaparāmrishṭah purushaviśhesha ishvarah	— Superior Lateral Occipital Gyrus: 3 L
25	२५ तत्र निरतिशयं सार्वज्ञबीजम् । Tatra niratishayam sārvaḡya bijam	— Cuneus: 1 R
26	२६ स एष पूर्वेषामपि गुरुः कालेनानवच्छेदात् Ṣa esha pūrveshām api guruh kālenānavachchhedāt	— Cuneus: 1 L
27	२७ तस्य वाचकः प्रणवः । Tasya vāchakah pranavah	— Cuneus: 2 R
28	२८ तज्ज्ञपस्तदर्थभावनम् । Tajjapastadārtha bhāvanam	— Cuneus: 2 L
29	२९ ततः प्रत्यक्चेतनाधिगमोऽप्यन्तरायाभावश्च । Tatah pratyak chetanādhigamo'pyantarāyābhāvashcha	— Cuneus: 3 R
30	३० व्याधिस्त्यानसंशयप्रमादालस्याविरति- भ्रान्तिदर्शनालब्धभूमिकत्वानवस्थितत्वानि चित्तविज्ञेपास्तेऽन्तरायाः । Vyādhistyānasamśhayapramādālasyaāviritibhṛāntidarshanālabdhabhūm ikatvānavasthitatvāni chittavikshepāste'ntarāyāh	— Cuneus: 3 L
31	३१ दुःखदौर्मनस्याङ्गमेजयत्वश्वासप्रश्वासा विज्ञेपसहभुवः । Duhkhadaurmanasyāṅgamejayatvashvāsaprashvāsā vikshepasahabhuvah	— Cuneus: 4 R

YOGA: Association Fibres

Yoga Sūtras - Chapter 1 (cont.)

Sanskrit text with transliteration

Location in anatomy

- | | | |
|----|--|----------------------|
| 32 | ३२ तत्प्रतिषेधार्थमेकतत्त्वाभ्यासः ।
Tat pratishedhārtham eka tattvābhyāsah | — Cuneus: 4 L |
| 33 | ३३ मैत्रीकरुणामुदितोपेक्षाणां सुखदुःखपुरुषापुरयविषयाणां भावनातश्चित्त-
प्रसादनम् ।
Maitrī karuṇā muditopekshānām sukha duḥkha punyāpunya vishayānām
bhāvanā tashchitta prasādanam | — Gyrus Linguli: 1 R |
| 34 | ३४ प्रच्छर्दनविधारणाभ्यां वा प्राणस्य ।
Prachchhardana vidhāranābhyām vā prānasya | — Gyrus Linguli: 1 L |
| 35 | ३५ विषयवती वा प्रवृत्तिरुत्पन्ना मनसः स्थितिनिबन्धिनी ।
Vishayavatī vā pravrittirutpannā manasah sthiti nibandhini | — Gyrus Linguli: 2 R |
| 36 | ३६ विशोका वा ज्योतिष्मती ।
Vishokā vā jyotishmatī | — Gyrus Linguli: 2 L |
| 37 | ३७ वीतरागविषयं वा चित्तम् ।
Vitarāgavishayam vā chittam | — Gyrus Linguli: 3 R |
| 38 | ३८ स्वप्ननिद्राज्ञानालम्बनं वा ।
Svapna nidrā gyānālambanam vā | — Gyrus Linguli: 3 L |

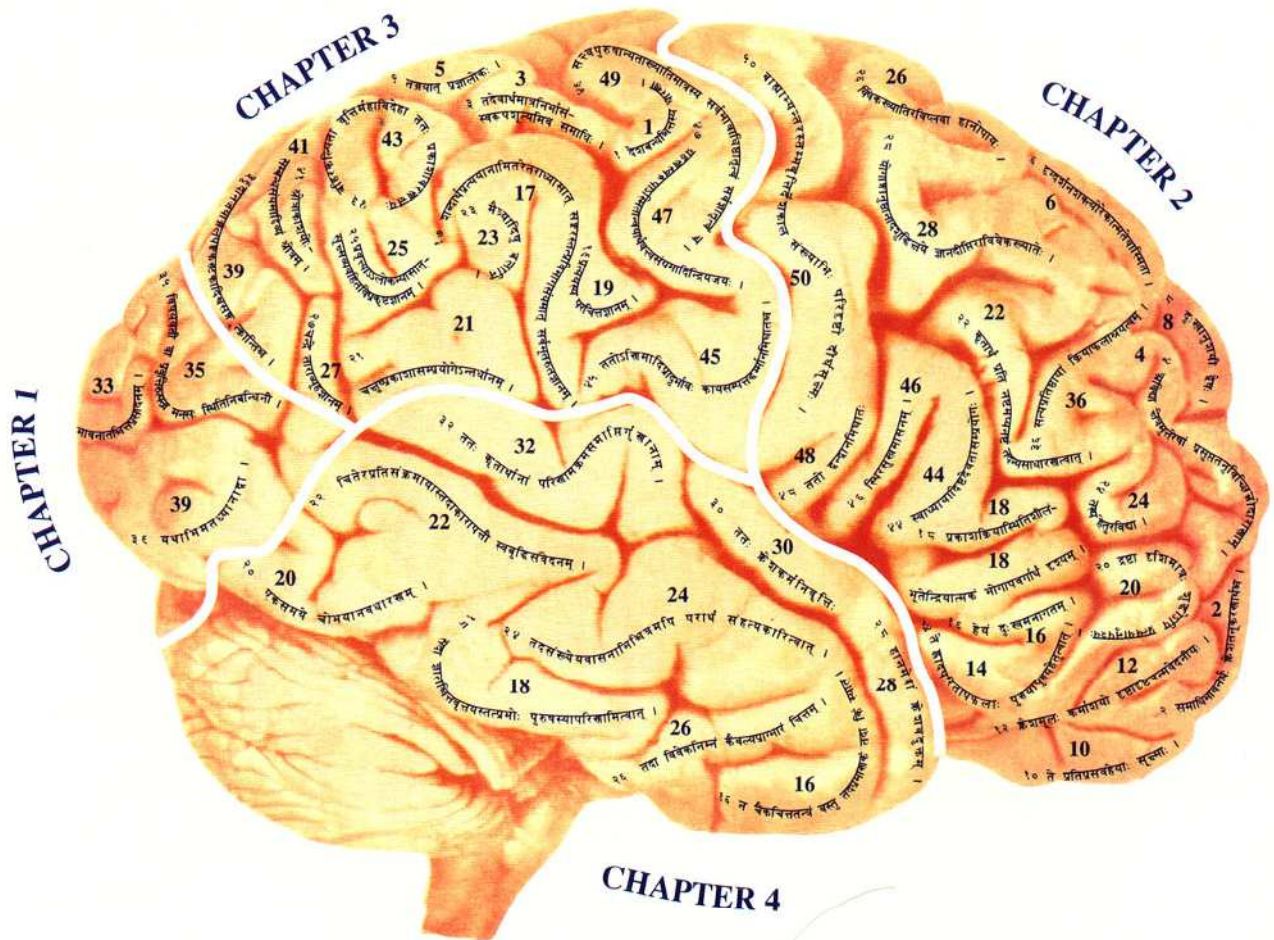


Figure 62 shows a right lateral view of the brain with the locations of the chapters of Yoga and the Sūtras corresponding to each of the cortical gyri (folds).

YOGA: Association Fibres**Yoga Sūtras - Chapter 1 (cont.)**

	Sanskrit text with transliteration	Location in anatomy
39	३९ यथाभिमतध्यानाद्वा । Yathābhimatadhyānādvā	— Gyrus Linguli: 4 R
40	४० परमाणुपरममहत्त्वान्तोऽस्य वशीकारः । Paramānuparamamahattvānto'sya vashikārah	— Gyrus Linguli: 4 L
41	४१ क्षीणवृत्तेरभिजातस्येव मणेरग्रहीतृग्रहणग्राह्येषु तत्स्थतदञ्जनतासमापत्तिः । Kshīnavritterabhijātasyev manergrahītrigrahanagrāhyeshu tatsthatadañjanatāsamāpattih	— Occipito-Temporal: 1 R
42	४२ तत्र शब्दार्थज्ञानविकल्पैः सङ्कीर्णा सवितर्का समापत्तिः । Tatr shabdārthagyanavikalpaih sankīrnā savitarkā samāpattih	— Occipito-Temporal: 1 L
43	४३ स्मृतिपरिशुद्धौ स्वरूपशून्येवार्थमात्रनिर्भासा निर्वितर्का । Smritiparishuddhau svarūpashūnyevārthamātr nirbhāsā nirvitarkā	— Occipito-Temporal: 2 R
44	४४ एतयैव सविचारा निर्विचारा च सूक्ष्मविषया व्याख्याता । Etayaiv savichārā nirvichārā ch sūkshnavishayā vyākhyātā	— Occipito-Temporal: 3 L
45	४५ सूक्ष्मविषयत्वं चालिङ्गपर्यवसानम् । Sūkshnavishayatvam chālingaparyavasānam	— Occipito-Temporal: 3 R
46	४६ ता एव सबीजः समाधिः । Tā ev sabījah samādhih	— Occipito-Temporal: 2 L
47	४७ निर्विचारवैशारद्येऽध्यात्मप्रसादः । Nirvichāravaishāradye'dhyātmaprasādah	— Inferior Longitudinal Fasciculus R
48	४८ कृतम्भरा तत्र प्रज्ञा । Ritambharā tatr pragyā	— Inferior Longitudinal Fasciculus L
49	४९ श्रुतानुमानप्रज्ञाभ्यामन्यविषया विशेषार्थत्वात् । Shrutānumānapragyābhyāmanyavishayā visheshārthatvāt	— Inferior Occipito-Frontal Fasciculus R
50	५० तत्रः संस्कारोऽन्यसंस्कारप्रतिबन्धी । Tajjah samskāro'nyasamskārapratibandhī	— Inferior Occipito-Frontal Fasciculus L
51	५१ तस्यापि निरोधे सर्वनिरोधान्नर्बीजः समाधिः । Tasyāpi nirodhe sarvanirodhānnarbījah samādhih	— Corpus Callosum Occipito-Occipital Part

महर्षि पतञ्जलि प्रणीत योगदर्शने प्रथमः समाधि पादः
Maharshi Patanjali praṇīta yogadarśhane prathamah samādhī pādah

Yoga Sūtras - Chapter 2

	Sanskrit text with transliteration	Location in anatomy
1	१ तपः स्वाध्यायेश्वरप्राणिधानानि क्रियायोगः । Tapah svādhyāyeshvarapraṇidhānāni kriyā yogah	— Gyrus Rectus: L
2	२ समाधिभावनार्थः क्लेशतनुकरणार्थश्च । Samādhibhāvanārthah kleshatanūkaranārthashch	— Gyrus Rectus: R
3	३ अविद्याऽस्मितारागद्वेषाभिनिवेशाः क्लेशाः । Avidyā'smitārāgadveshābhiniveshāh kleshāh	— Orbital Gyri: 1 L
4	४ अविद्या क्षेत्रमुत्तरेषां प्रसुप्ततनुविच्छिन्नोदाराणाम् । Avidyā kshetramuttareṣāh prasuptatanuvichchinnodārāṇām	— Orbital Gyri: 1 R
5	५ अनित्याशुचिदुःखानात्मसु नित्यशुचिसुखात्मख्यातिरविद्या । Anityāshuchiduhkhānātmasu nityashuchisukhātmakhyātiravidyā	— Orbital Gyri: 2 L
6	६ दृग्दर्शनशक्त्योरेकात्मतेवास्मिता । Dṛigdarshanashaktyorekātmatevāsmitā	— Orbital Gyri: 2 R

YOGA: Association Fibres

Yoga Sūtras - Chapter 2 (cont.)

	Sanskrit text with transliteration	Location in anatomy
7	७ सुखानुशयी रागः । Sukhānushayī rāgaḥ	— Orbital Gyri: 3 L
8	८ दुःखानुशयी द्वेषः । Duhkhānushayī dveshaḥ	— Orbital Gyri: 3 R
9	९ स्वरसवाही विदुषोऽपि तथा रूढोऽभिनवेशः । Svarasavāhī viduṣho'pi tathā rūḍho'bhinivēśaḥ	— Orbital Gyri: 4 L
10	१० ते प्रतिप्रसवेहेयाः सूक्ष्माः । Te pratiprasavaheyāḥ sūkṣmāḥ	— Orbital Gyri: 4 R
11	११ ध्यानेहेयास्तद्वृत्तयः । Dhyānaheyāstadvṛttayah	— Inferior Frontal Gyrus, Orbital Part: 1 L
12	१२ क्लेशमूलः कर्माशयो दृष्टादृष्टजन्मवेदनीयः । Kleśhamūlah karmāśhayaḥ dṛiṣṭādṛiṣṭajanmavedanīyah	— Inferior Frontal Gyrus, Orbital Part: 1 R
13	१३ सति मूले तद्विपाको जात्यायुर्भोगाः । Sati mūle tadvipāko jātyāyurbhogāḥ	— Inferior Frontal Gyrus, Orbital Part: 2 L

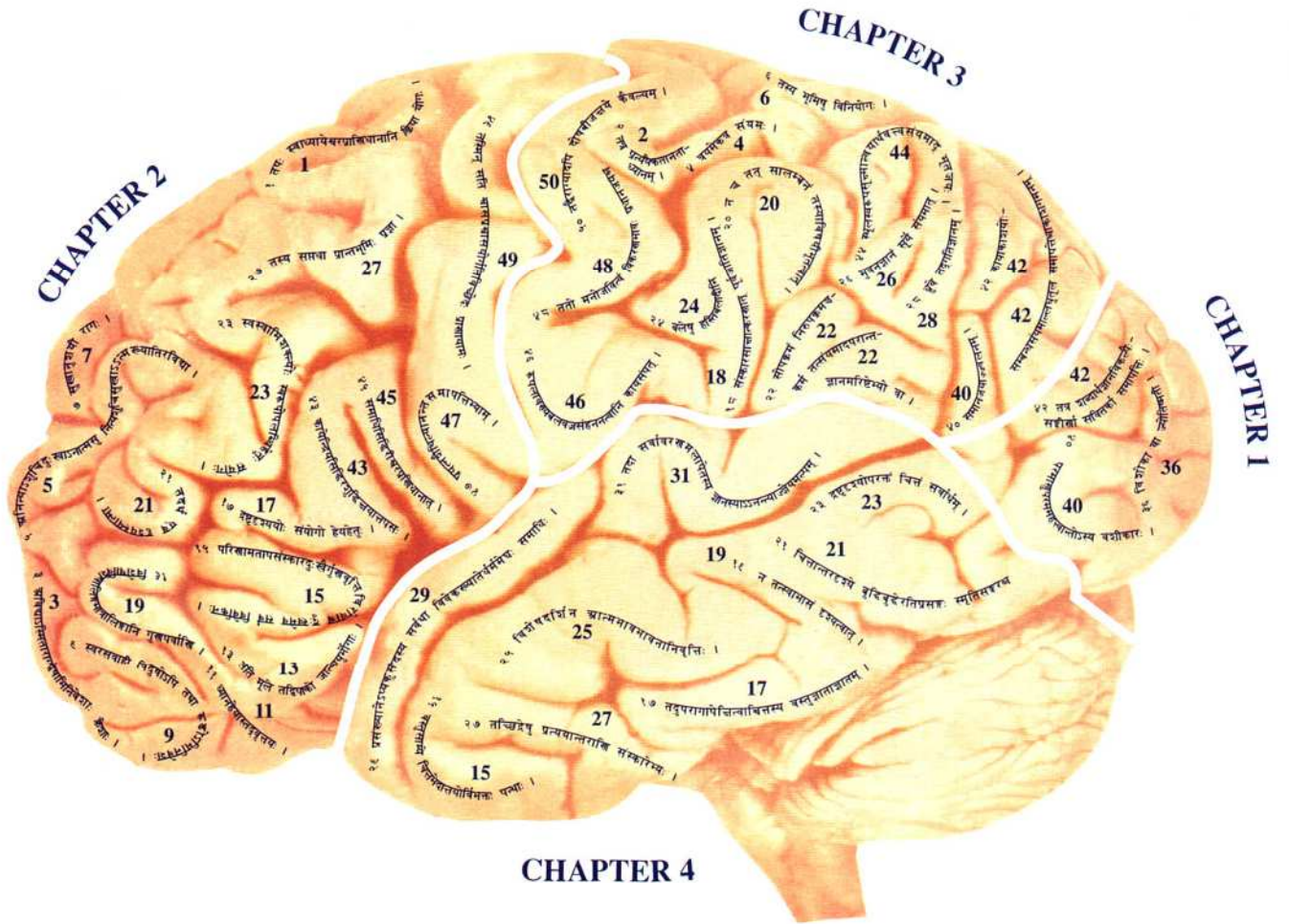


Figure 63 shows a left lateral view of the brain with the locations of the chapters of Yoga and the Sūtras corresponding to each of the cortical gyri (folds).

YOGA: Association Fibres

Yoga Sūtras - Chapter 2 (cont.)

Sanskrit text with transliteration	Location in anatomy
14 १४ ते ह्लादपरितापफलाः पुण्यापुण्यहेतुत्वात् । Te hlādaparitāpaphalāḥ punyāpunyahetutvāt	— Inferior Frontal Gyrus, Orbital Part: 2 R
15 १५ परिणामतापसंस्कारदुःखैर्गुणवृत्तिविरोधाच्च दुःखमेव सर्वं विवेकिनः । Parināmatāpasamskāraduḥkhaigunavrittivirodhāchch duḥkhamēv sarvaṁ vivekinah	— Inferior Frontal Gyrus, Triangularis Part: 1 L
16 १६ हेयं दुःखमनागतम् । Heyam duḥkhamanāgatam	— Inferior Frontal Gyrus, Triangularis Part: 1 R
17 १७ द्रष्टृदृश्ययोः संयोगो हेयहेतुः । Drashtṛdrishyayoh samyogo heyahetuh	— Inferior Frontal Gyrus, Triangularis Part: 2 L
18 १८ प्रकाशक्रियास्थितिशीलं भूतेन्द्रियात्मकं भोगापवर्गार्थं दृश्यम् । Prakāshakriyāsthītishīlaṁ bhūteन्द्रियात्मakam bhogāpavargārtham drishyam	— Inferior Frontal Gyrus, Triangularis Part: 2 R
19 १९ विशेषाविशेषलिङ्गमात्रालिङ्गानि गुणपर्वणि । Visheshā visheshalingamātrā lingāni guṇaparvāni	— Middle Frontal Gyrus, Lower Part: 1 L
20 २० द्रष्टा दृशिमात्रः शुद्धोऽपि प्रत्ययानुपश्यः । Drashtā drishimātrah shuddho'pi pratyayānupashyah	— Middle Frontal Gyrus, Lower Part: 1 R
21 २१ तदर्थ एव दृश्यस्यात्मा । Tadarth eva drishyasātmā	— Middle Frontal Gyrus, Lower Part: 2 L
22 २२ कृतार्थं प्रति नष्टमप्यनाशतं तदन्यसाधारणत्वात् । Kritārtham prati nashṭamapyanashtam tadanyasādhāranatvāt	— Middle Frontal Gyrus, Lower Part: 2 R
23 २३ स्वस्वामिशक्त्योः स्वरूपोपलब्धिहेतुः संयोगः । Svasvāmishaktyoh svarūpopalabdhihetuh samyogah	— Middle Frontal Gyrus, Lower Part: 3 L
24 २४ तस्य हेतुरविद्या । Tasya heturavidyā	— Middle Frontal Gyrus, Lower Part: 3 R
25 २५ तदभावात् संयोगाभावो हानं तद्दृशेः कैवल्यम् । Tadabhāvāt samyogābhāvo hānam taddrisheḥ kaivalyam	— Uncinate Fasciculus L
26 २६ विवेकख्यातिरविप्लवा हानोपायः । Vivekakhyātiraviplavā hānopāyah	— Uncinate Fasciculus R
27 २७ तस्य सप्तधा प्रान्तभूमिः प्रज्ञा । Tasya saptadhā prāntabhūmiḥ pragyā	— Superior Frontal Gyrus, Lower Part: 1 L
28 २८ योगाङ्गानुष्ठानादशुद्धिक्षये ज्ञानदीप्तिराविवेकख्यातेः । Yogāṅgānushṭhānādashuddhikshaye gyānādiptirāvivekakhyāteh	— Superior Frontal Gyrus, Lower Part: 1 R
29 २९ यमनियमासनप्राणायामप्रत्याहारधारणाध्यानसमाधयोऽष्टावङ्गानि । Yama niyam āsana prānāyāma pratyāhār dhāranā dhyāna samādhayo'shtāvangāni	— Superior Frontal Gyrus, Lower Part: 2 L
30 ३० अहिंसासत्यास्तेयब्रह्मचर्यापरिग्रहा यमाः । Amhimsā satyāsteyabrahmacharyāparigrahā yamāḥ	— Superior Frontal Gyrus, Lower Part: 2 R
31 ३१ जातिदेशकालसमयानवच्छिन्नाः सार्वभौमामहाव्रतम् । Jātideshakālasamayānavachchinnāḥ sārvaubhaumā mahāvratam	— Superior Frontal Gyrus, Upper Part: 1 L
32 ३२ शौचसन्तोषतपःस्वाध्यायेश्वरप्रणिधानानिनियमाः । Shauchasantoshatapahsvādhyāyeshvarapranī dhānāni niyamāḥ	— Superior Frontal Gyrus, Upper Part: 1 R
33 ३३ वितर्कबाधने प्रतिपक्षभावनम् । Vitarkabādhane pratipakshabhāvanam	— Superior Frontal Gyrus, Upper Part: 2 L
34 ३४ वितर्का हिंसादयः कृतकारितानुमोदिता लोभक्रोधमोहपूर्वका- मृदुमध्याधिमात्रा दुःखाज्ञानानन्तफला इति प्रतिपक्षभावनम् । Vitarkā himsādayah kritakāritānumoditā lobh krodh moh pūrvakā mṛidu madhyādhimātrā duḥkhāgyānānantaphalā iti pratipaksh bhāvanam	— Superior Frontal Gyrus, Upper Part: 2 R
35 ३५ अहिंसाप्रतिष्ठायां तत्सन्निधौ वैरत्यागः । Ahimsā pratishṭhāyāṁ tat sannidhau vairatyāgah	— Superior Frontal Gyrus, Upper Part: 3 L

YOGA: Association Fibres

Yoga Sūtras - Chapter 2 (cont.)

Sanskrit text with transliteration	Location in anatomy
36 ३६ सत्यप्रतिष्ठायां क्रियाफलाश्रयत्वम् । Satya pratishthāyām kriyāphalāśhrayatvam	— Superior Frontal Gyrus, Upper Part: 3 R
37 ३७ अस्तेयप्रतिष्ठायां सर्वरत्नोपस्थानम् । Asteya pratishthāyām sarvaratnopasthānam	— Middle Frontal Gyrus, Upper Part: 1 L
38 ३८ ब्रह्मचर्यप्रतिष्ठायां वीर्यलाभः । Brahmacharyapratishthāyām vīryalābhah	— Middle Frontal Gyrus, Upper Part: 1 R
39 ३९ अपरिग्रहस्थैर्ये जन्मकथन्तासम्बोधः । Aparigrah sthairye janm kathantāsambodhah	— Middle Frontal Gyrus, Upper Part: 2 L
40 ४० शौचात्स्वाङ्गजुगुप्सा परैरसंसर्गः । Shauchātsvāng jugupsā parairasamsargah	— Middle Frontal Gyrus, Upper Part: 2 R
41 ४१ सत्त्वशुद्धि सौमनस्यैकाग्र्येन्द्रियजयात्मदर्शनयोग्यत्वानि च । Sattv shuddhi saumanasyaikāgyrendriya jayātm darshan yogyatvāni cha	— Middle Frontal Gyrus, Upper Part: 3 L
42 ४२ सन्तोषादनुत्तमः सुखलाभः । Santoshād anuttamah sukhālābhah	— Middle Frontal Gyrus, Upper Part: 3 R

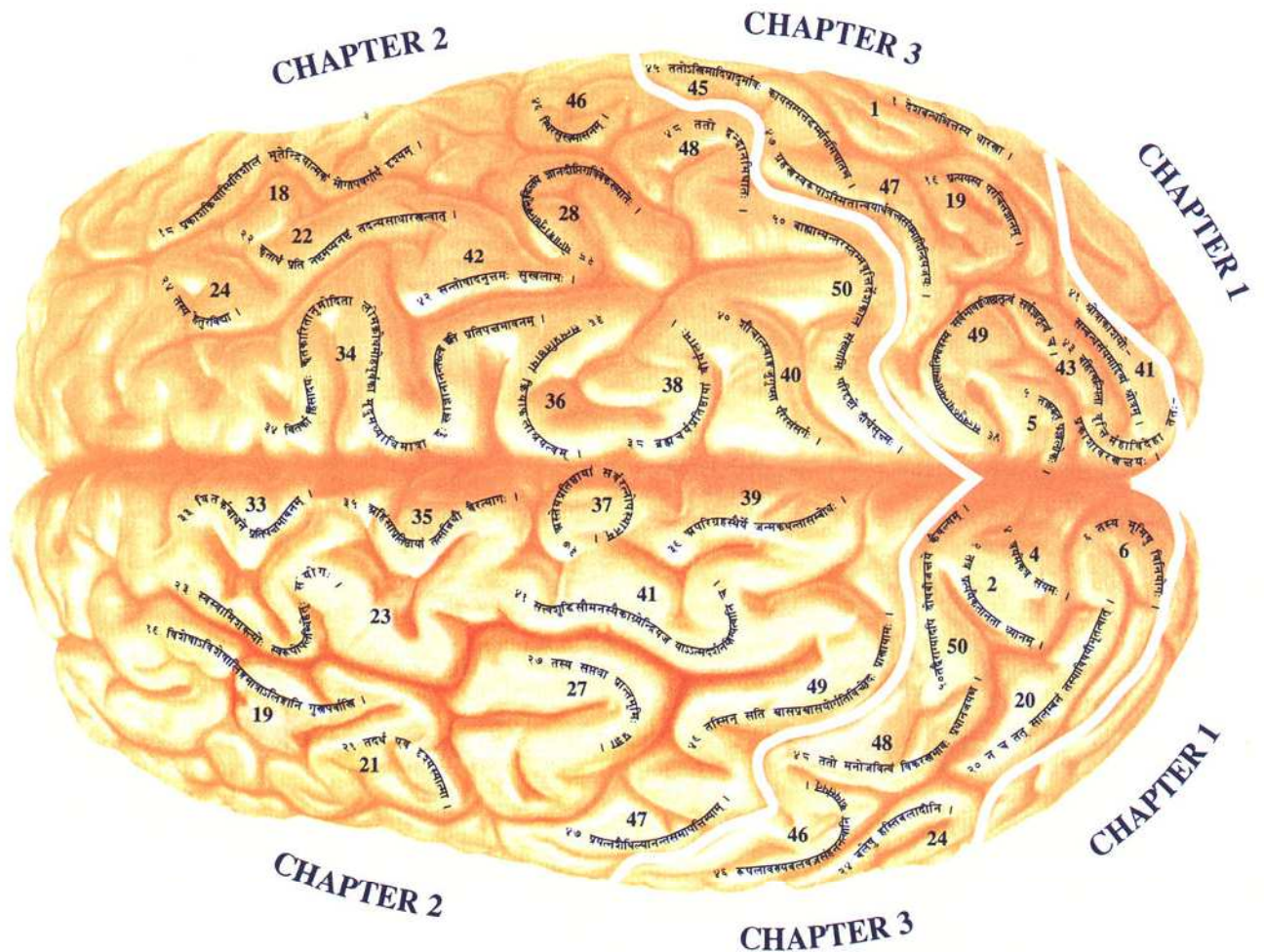


Figure 64 shows a rostral view of the brain with the locations of the chapters of Yoga and the Sūtras corresponding to each of the cortical gyri (folds).

YOGA: Association Fibres

Yoga Sūtras - Chapter 2 (cont.)

	Sanskrit text with transliteration	Location in anatomy
43	४३ कायेन्द्रियसिद्धिरशुद्धिस्तयात्तपसः । Kāyendriya siddhirashuddhi kshayāttapasah	— Inferior Frontal Gyrus, Opercularis Part: 1 L
44	४४ स्वाध्यायादिष्टदेवतासम्प्रयोगः । Svādhyāyādisht devatā samprayogah	— Inferior Frontal Gyrus, Opercularis Part: 1 R
45	४५ समाधिसिद्धिरीश्वरप्रणिधानात् । Samādhi siddhi rīshvar pranidhānāt	— Inferior Frontal Gyrus, Opercularis Part: 2 L
46	४६ स्थिरसुखमासनम् । Sthīrasukhamāsanam	— Inferior Frontal Gyrus, Opercularis Part: 2 R
47	४७ प्रयत्नशैथिल्यानन्तसमापत्तिभ्याम् । Prayatn shāithilyānant samāpattibhyām	— Precentral Gyrus: 1 L
48	४८ ततो द्वन्द्वानभिघातः । Tato dvandvānabighātah	— Precentral Gyrus: 1 R
49	४९ तस्मिन् सति श्वासप्रश्वासयोगतिविच्छेदः प्राणायामः । Tasmin sati shvās prashvāsayorgati vichchedah prānāyāmah	— Precentral Gyrus: 2 L
50	५० बाह्याभ्यन्तरस्तम्भवृत्तिर्देशकालसंख्याभिः परिदृष्टो दीर्घसूक्ष्मः । Bāhyābhyantarastambhavrittirdeshakāl samkhyābhiḥ paridrishto dīrghasūkshmah	— Precentral Gyrus: 2 R
51	५१ बाह्याभ्यन्तरविषयाक्षेपी चतुर्थः । Bāhyābhyantar viṣayākshepī chaturthah	— Precentral Gyrus: 3 L
52	५२ ततः क्षीयते प्रकाशावरणम् । Tatah kshīyate prakāshāvaranam	— Precentral Gyrus: 3 R
53	५३ धारणासु च योग्यता मनसः । Dhāranāsu cha योग्यता manasah	— Arcuate Fasciculus: L
54	५४ स्वविषयासम्प्रयोगे चित्तस्वरूपानुकार इवेन्द्रियाणां प्रत्याहारः । Svavishayā samprayoge chitt svarūpānukār ivendriyānām pratyāhārah	— Arcuate Fasciculus: R
55	५५ ततः परमा वश्यतेन्द्रियाणाम् । Tatah paramāvashyatendriyānām	— Corpus Callosum Fronto-Frontal

महर्षि पतञ्जलि प्रणीत योगदर्शने द्वितीयः साधनपादः ।
Maharshi Patanjali prāṇita yogadarshane dvitīyaḥ sādhanapādaḥ

Yoga Sūtras - Chapter 3

	Sanskrit text with transliteration	Location in anatomy
1	१ देशबन्धश्चित्तस्य धारणा । Desh bandh shcittasya dhāranā	— Superior Parietal Lobule: 1 R
2	२ तत्र प्रत्ययैकतानता ध्यानम् । Tatr pratyayaikatānatā dhyānam	— Superior Parietal Lobule: 1 L
3	३ तदेवार्थमात्रनिर्भासं स्वरूपशून्यमिव समाधिः । Tadevārthamātr nirbhāsam svarūpashūnyamiv samādhiḥ	— Superior Parietal Lobule: 2 R
4	४ त्रयमेकत्र संयमः । Trayamekatr samyamah	— Superior Parietal Lobule: 2 L
5	५ तज्जयात् प्रज्ञालोकः । Tat jayāt pragyālokaḥ	— Superior Parietal Lobule: 3 R
6	६ तस्य भूमिषु विनियोगः । Tasya bhūmiṣu viniyogah	— Superior Parietal Lobule: 3 L

YOGA: Association Fibres

Yoga Sūtras - Chapter 3 (cont.)

	Sanskrit text with transliteration	Location in anatomy
7	७ त्रयमन्तरङ्गं पूर्वेभ्यः । Trayamantarangam pūrvebhyah	— Superior Parietal Lobule: 4 R
8	८ तदपि बहिरङ्गं निर्बीजस्य । Tadapi bahirangam nirbījasya	— Superior Parietal Lobule: 4 L
9	९ व्युत्थाननिरोधसंस्कारयोरभिभवप्रादुर्भावा निरोधक्षणाचित्तान्वयो- निरोधपरिणामः । Vyutthān nirodh samskārayorabhibhav prādurbhāvau nirodh kshan chittānvayo nirodh parināmah	— Precuneus: 1 R
10	१० तस्य प्रशान्तवाहिता संस्कारात् । Tasya prashāntavāhitā samskārat	— Precuneus: 1 L
11	११ सर्वार्थतैकाग्रतयोः क्षयोदयौ चित्तस्य समाधिपरिणामः । Sarvārthataikāgratayoh kshayodayau chittasya samādhi parināmah	— Precuneus: 2 R
12	१२ तत्र पुनः शान्तोदितौ तुल्यप्रत्ययौ चित्तस्यैकाग्रतापरिणामः । Tatra punah shāntoditau tulya pratyayau chittasyaikāgratā parināmah	— Precuneus: 2 L

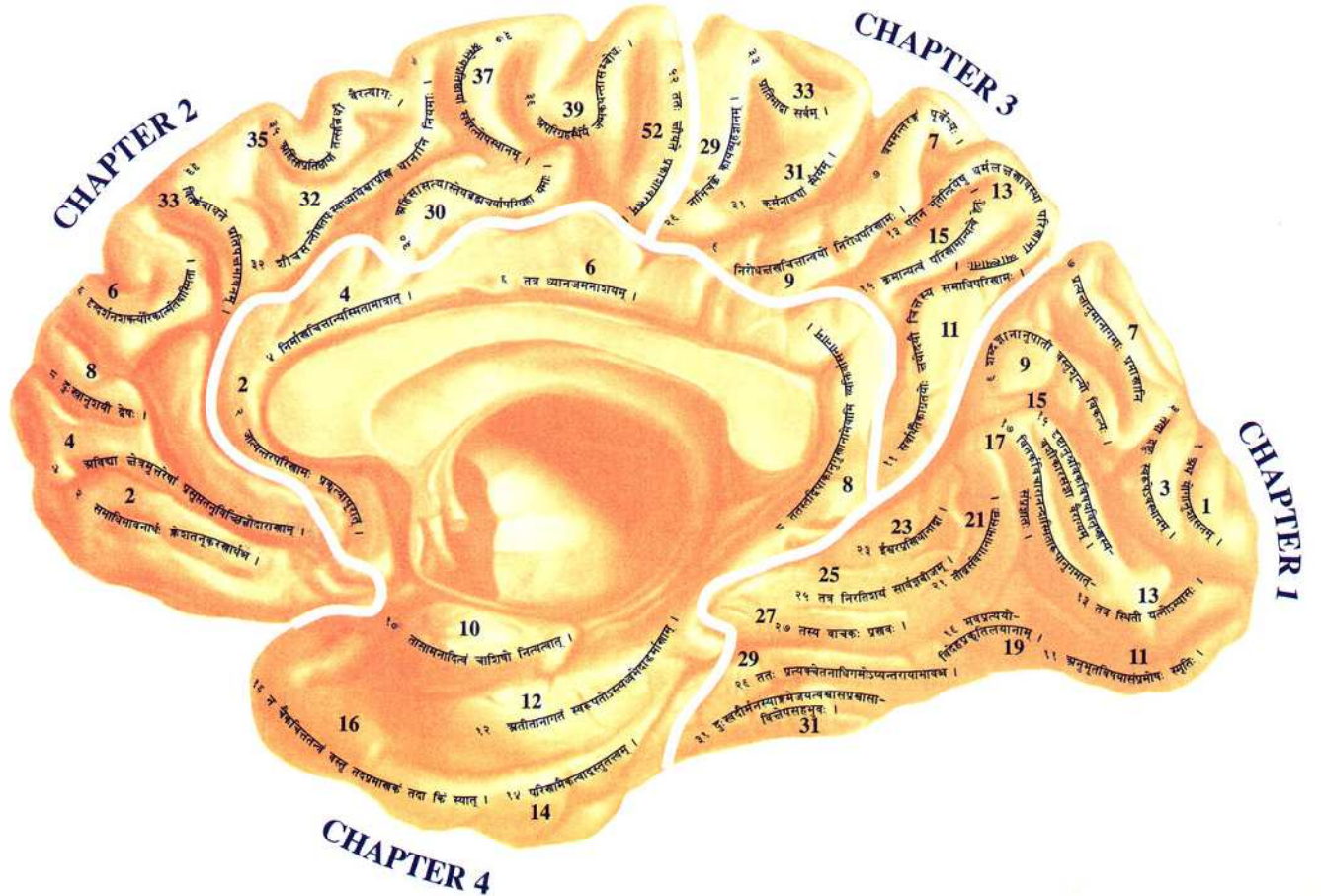


Figure 65 shows a right medial view of the brain with the locations of the chapters of Yoga and the Sūtras corresponding to each of the cortical gyri (folds).

YOGA: Association Fibres**Yoga Sūtras - Chapter 3 (cont.)**

Sanskrit text with transliteration	Location in anatomy
13 १३ एतेन भूतेन्द्रियेषु धर्मलक्षणावस्थापरिणामा व्याख्याताः । Eten bhūtendriyeshu dharm lakshanāvasthā parināmā vyākhyātāḥ	— Precuneus: 3 R
14 १४ शान्तोदिताव्यपदेश्यधर्मानुपाती धर्मी । Shāntoditā vyapadeshya dharmānupātī dharmī	— Precuneus: 3 L
15 १५ क्रमान्यत्वं परिणामान्यत्वे हेतुः । Kramānyatvam parināmānyatve hetuh	— Precuneus: 4 R
16 १६ परिणामत्रयसंयमादतीतानागतज्ञानम् । Parinām traya samyamā datītānāgat gyānam	— Precuneus: 4 L
17 १७ शब्दार्थप्रत्ययानामितरेतराध्यासात् सङ्करस्तत्प्रविभागसंयमात्- सर्वभूतरुतज्ञानम् । Shabdārth pratyayānā mitaretarādhyāsāt sankarastat pravibhāg samyamāt sarvabhūt rutagyānam	— Supramarginal Gyrus: 1 R
18 १८ संस्कारसंज्ञात्करणत्वं पूर्वजातिज्ञानम् । Samskār sākshāt karanāt pūrvajāti gyānam	— Supramarginal Gyrus: 1 L
19 १९ प्रत्ययस्य परचित्तज्ञानम् । Pratyayasya paracittagyānam	— Supramarginal Gyrus: 2 R
20 २० न च तत् सलम्बनं तस्याविषयीभूतत्वात् । Na cha tat sālambanam tasyā vishayī bhūtāt	— Supramarginal Gyrus: 2 L
21 २१ कायरूपसंयमात्तद्ग्राह्यशक्तिस्तम्भे तच्चक्षुष्काशासम्प्रयोगेऽन्तर्धानम् । Kāya rūp samyamāt tad grāhya shakti stambhe chakshush prakāshā samprayoge antardhānam	— Supramarginal Gyrus: 3 R
22 २२ सोपक्रमं निरुपक्रमञ्च कर्म तत्संयमादपरान्तज्ञानमरिष्टेभ्यो वा śopakramam nirup kramanch karm tat samyamād aparānt gyānam arishtebyo vā	— Supramarginal Gyrus: 3 L
23 २३ मैत्र्यादिषु बलानि । Maitryādishu balāni	— Supramarginal Gyrus: 4 R
24 २४ बलेषु हस्तिबलादीनि । Baleshu hasti balādīni	— Supramarginal Gyrus: 4 L
25 २५ प्रवृत्त्यालोकन्यासात् सूक्ष्मव्यवहितविप्रकृष्टज्ञानम् । Pravṛittyālok nyāsāt sūkshma vyavahit viprakṛṣṭ gyānam	— Angular Gyrus: 1 R
26 २६ भुवनज्ञानं सूर्ये संयमात् । Bhuvan gyānam sūrye samyamāt	— Angular Gyrus: 1 L
27 २७ चन्द्रे ताराव्यूहज्ञानम् । Chandre tāra vyūh gyānam	— Angular Gyrus: 2 R
28 २८ ध्रुवे तद्गतिज्ञानम् । Dhruve tad gati gyānam	— Angular Gyrus: 2 L
29 २९ नाभिचक्रे कायव्यूहज्ञानम् । Nābhi chakre kāya vyūh gyānam	— Post-Central Gyrus, Superior Segment: 1 R
30 ३० कण्ठकूपे क्षुत्पिपासानिवृत्तिः । Kanth kūpe kshut pipāsā nivṛtṭih	— Post-Central Gyrus, Superior Segment: 1 L
31 ३१ कूर्मनाड्यां स्थैर्यम् । Kūrm nāḍyām sthairyam	— Post-Central Gyrus, Superior Segment: 2 R
32 ३२ मूर्धज्योतिषि सिद्धदर्शनम् । Mūrdhajyotiṣi siddhadarshanam	— Post-Central Gyrus, Superior Segment: 2 L
33 ३३ प्रातिभाद्धा सर्वम् । Prātibhādvā sarvam	— Post-Central Gyrus, Superior Segment: 3 R

YOGA: Association Fibres

Yoga Sūtras - Chapter 3 (cont.)

Sanskrit text with transliteration	Location in anatomy
34 ३४ हृदये चित्तसंविद् । Hridaye chitt samvit	— Post-Central Gyrus, Superior Segment: 3 L
35 ३५ सत्त्वपुरुषयोरत्यन्तासङ्कीर्णयोः प्रत्ययाविशेषो भोगः- परार्थात्स्वार्थसंयमात् पुरुषज्ञानम् । Sattv purushayo ratyantā sankīrnayoh pratyayāवेशesho bhogah parārthātsvārth samyamāt purush gyānam	— Insula: 1 R
36 ३६ ततः प्रातिभश्रावणवेदनादर्शास्वादवार्त्ता जायन्ते । Tatah prātibh shrāvan vedanādarshāsvād vārtā jāyante	— Insula: 1 L
37 ३७ ते समाधायुपसर्गा व्युत्थाने सिद्धयः । Te samādhā vupasargā vyutthāne siddhayah	— Insula: 2 R
38 ३८ बन्धकारणशैथिल्यात्प्रचारसंवेदनाच्च चित्तस्य परशरीरावेशः । Bandh kāran shāithilyāt prachār samvedanāchch chittasya parasharīrā veshah	— Insula: 2 L
39 ३९ उदानजयाञ्जलपङ्ककटकादिश्वसङ्ग उत्क्रान्तिश्च । Udān jayāñjal pank kankatādishvasang utkrāntishch	— Angular Gyrus: 3 R
40 ४० समानजयाज्ज्वलनम् । Samān jayāj jvalanam	— Angular Gyrus: 3 L

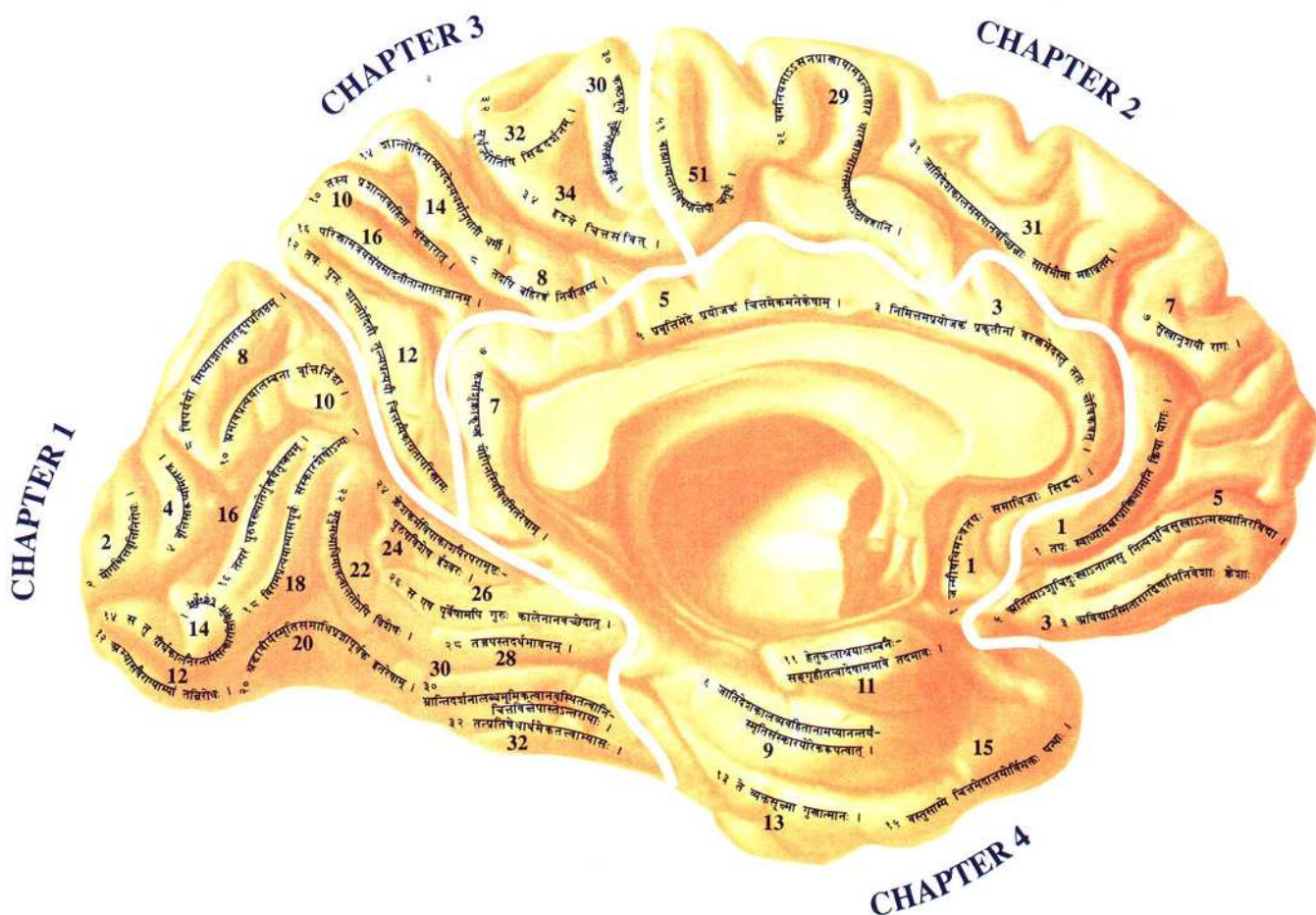


Figure 66 shows a left medial view of the brain with the locations of the chapters of Yoga and the Sūtras corresponding to each of the cortical gyri (folds).

YOGA: Association Fibres

Yoga Sūtras - Chapter 3 (cont.)

	Sanskrit text with transliteration	Location in anatomy
41	४१ श्रोत्राकाशयोः सम्बन्धसंयमादिव्यं श्रोत्रम् । Shrotrākāshayoh sambandh samyamāddivyaṁ shrotram	— Angular Gyrus: 4 R
42	४२ कायाकाशयोः सम्बन्धसंयमाल्लघुतूलसमापत्तेश्चाकाशगमनम् । Kāyākāshayoh sambandh samyamāllaghutūl samā patteshchākāsh gamanam	— Angular Gyrus: 4 L
43	४३ बहिरकल्पिता वृत्तिर्महाविदेहा ततः प्रकाशावरणक्षयः । Bahirakalpita vrittirmahāvidehā tatah prakāshāvaranakshayah	— Angular Gyrus: 5 R
44	४४ स्थूलस्वरूपसूक्ष्मान्वयार्थवत्त्वसंयमाद्भूतजयः । Sthūlasvarūpasūkshmanvayārthavattvasamyamād bhūtajayah	— Angular Gyrus: 5 L
45	४५ ततोऽणिमादिप्रादुर्भावः कायसम्पत्तद्धर्मानभिघातश्च । Tatonimādiprādurbhāvah kāyasampattaddharmānabhighātashca	— Post-Central Gyrus, Inferior Segment: 1 R
46	४६ रूपलावण्यबलवज्रसहननन्वानि कायसंपत् । Rūpalāvanyabalavajrasamhananatvāni kāyasampat	— Post-Central Gyrus, Inferior Segment: 1 L
47	४७ ग्रहणस्वरूपास्मितान्वयार्थवत्त्वसंयमादिन्द्रियजयः । Grahanasvarūpā smitānvayārthavattvasamyamādinidriyajayah	— Post-Central Gyrus, Inferior Segment: 2 R
48	४८ ततो मनोजवित्त्वं विकरणभावः प्रधानजयश्च । Tato manojavitvam vikaranabhāvah pradhānajayashca	— Post-Central Gyrus, Inferior Segment: 2 L
49	४९ सत्त्वपुरुषान्यताख्यातिमात्रस्य सर्वभावाधिष्ठातृत्वं सर्वज्ञातृत्वं च । Sattvapurushānyatākhyātimātrasya sarvabhāvādhishthātritvam sarvagyātritvam ca	— Post-Central Gyrus, Inferior Segment: 3 R
50	५० तद्वैराग्यादपि दोषबीजक्षये कैवल्यम् । Tadvairāgyādapi doshabījakshaye kaivalyam	— Post-Central Gyrus, Inferior Segment: 3 L
51	५१ स्थान्युपनिमन्त्रणे सङ्गस्ययाकरणं पुनरनिष्टप्रसङ्गात् । Sthānyupanimantrane sangasmyākaranam punaranishtaprasangāt	— Cingulum R
52	५२ क्षणतत्क्रमयोः संयमाद्विवेकजं ज्ञानम् । Kshanatatkramayoh samyamādvivekajam gyānam	— Cingulum L
53	५३ जातिलक्षणदेशैरन्यतानवच्छेदात्तुल्ययोस्ततः प्रतिपत्तिः । Jātilakshanadeshairanyatānavacchedāttulya yostatah pratipattiḥ	— Superior Longitudinal Fasciculus R
54	५४ तारकं सर्वविषयं सर्वथाविषयमक्रमं चेति विवेकजं ज्ञानम् । Tārakam sarvavishayam sarvathāvishayamakramam ceti vivekajam gyānam	— Superior Longitudinal Fasciculus L
55	५५ सत्त्वपुरुषयोः शुद्धिसाम्ये कैवल्यमिति । Sattvapurushayoh shuddhisāmye kaivalyamiti	— Corpus Callosum, Parieto-Parietal Section

महर्षि पतञ्जलि प्रणीत योगदर्शने तृतीयः विभूतिपादः ।
Maharshi Patanjali pranīta yogadarshane tritīyah vibhūtipādaḥ

Yoga Sūtras - Chapter 4

	Sanskrit text with transliteration	Location in anatomy
1	१ जन्मौषधिमन्त्रतपःसमाधिजाः सिद्धयः । Janmaushadhi mantr tapah samādhijāḥ siddhayah	— Subcallosal Gyrus: 1 L
2	२ जात्यन्तरपरिणामः प्रकृत्यापूरात् । Jātyantar parināmah prakṛityā pūrāt	— Subcallosal Gyrus: 1 R
3	३ निमित्तमप्रयोजकं प्रकृतीनां वरणभेदस्तु ततः क्षेत्रिकवत् । Nimittamaprayojakam prakṛitīnām varanabhedastu tatah kshetrikavat	— Cingulate Gyrus: 1 L
4	४ निर्माणचित्तान्यस्मितामात्रात् । Nirmāṇ chittānyasmitā mātrāt	— Cingulate Gyrus: 1 R

YOGA: Association Fibres

Yoga Sūtras - Chapter 4 (cont.)

	Sanskrit text with transliteration	Location in Anatomy
5	५ प्रवृत्तिभेदे प्रयोजकं चित्तमेकमनेकेषाम् । Pravritti bhedē prayojakam chittam ekamanekeshām	— Cingulate Gyrus: 2 L
6	६ तत्र ध्यानजमनाशयम् । Tatr dhyānajamanāshayam	— Cingulate Gyrus: 2 R
7	७ कर्माशुक्लाकृष्णं योगिनस्त्रिविधमितरेषाम् । Karmāshuklā krishnam yogina strividham itareshām	— Cingulate Gyrus: 3 L
8	८ ततस्तद्विपाकानुगुणानामेवाभिव्यक्तिर्वासनानाम् । Tatastad vipākānugunānām evābhi vyaktir vāsanānām	— Cingulate Gyrus: 3 R
9	९ जातिदेशकालव्यवहितानामप्यानन्तर्यं स्मृतिसंस्कारयोरेकरूपत्वात् । Jāti desh kāl vyavahitānām apyānantaryam smriti samskārayorekarūpatvāt	— Parahippocampal: 1 L
10	१० तासामनादित्वं चाशिषो नित्यत्वात् । Tāsāmanādityam chāshisho nityatvāt	— Parahippocampal: 1 R
11	११ हेतुफलाश्रयालम्बनैः सङ्गृहीतत्वादिषामभावे तदभावः । Hetu phalāshrayālambanaih sangrihitatvād eśhāmabhāve tadabhāvah	— Uncus: L

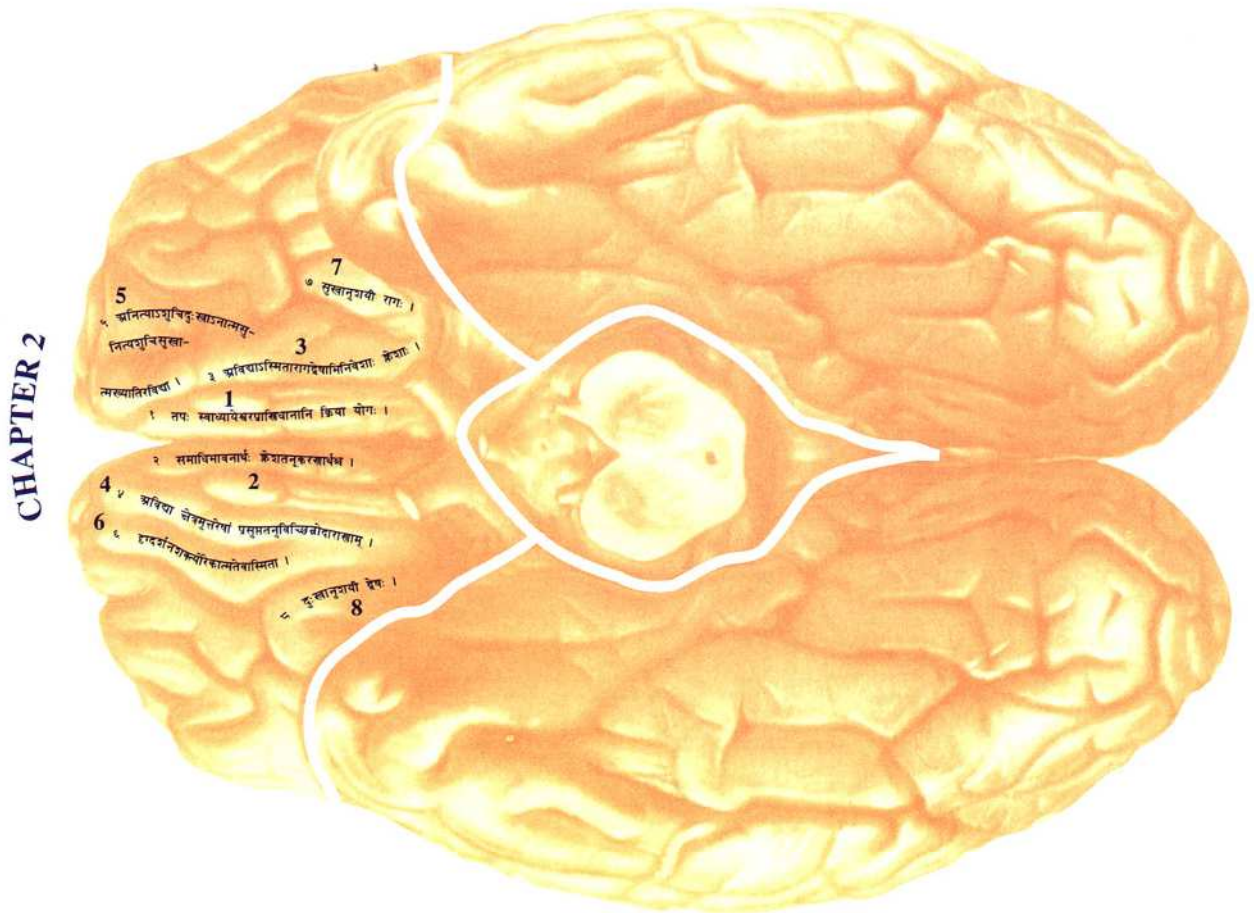


Figure 67 shows a ventral (inferior) view of the brain with the locations of some of the Sūtras corresponding to chapter 2 of Yoga. The other Sūtras have been placed in other views of the brain.

YOGA: Association Fibres

Yoga Sūtras - Chapter 4 (cont.)

	Sanskrit text with transliteration	Location in anatomy
12	१२ अतीतानागतं स्वरूपतोऽस्त्यध्वभेदाद्धर्माणाम् । Atītānāgatam svarūpatostyadhvabhedāddharmāṇām	— Uncus:R
13	१३ ते व्यक्तसूक्ष्मा गुणात्मानः । Te vyaktasūkṣhmā guṇātmānah	— Occipito-Temporal Gyrus, Temporal Part: 1 L
14	१४ परिणामैकत्वाद्वस्तुतत्त्वम् । Parināmaikatvād vastutattvam	— Occipito-Temporal Gyrus, Temporal Part:1 R
15	१५ वस्तुसाम्ये चित्तभेदात्तयोर्विभक्तः पन्थाः । Vastusāmye cittabhedāttayorvibhaktah panthāh	— Occipito-Temporal Gyrus, Temporal Part:2 L
16	१६ न चाकचित्ततन्त्रं वस्तु तदप्रमाणकं तदा किं स्यात् । Na chaikachitt tantram vastu tadapramāṇakam tadā kim syāt	— Occipito-Temporal Gyrus, Temporal Part:2 R
17	१७ तदुपरागापेक्षित्वाच्चित्तस्य वस्तु ज्ञाताज्ञातम् । Tad uparāgāpekṣhitvāt chittasya vastu gyātā gyātam	— Inferior Temporal Gyrus:1 L
18	१८ सदा ज्ञाताश्चित्तवृत्तयस्तत्प्रभोः पुरुषस्यापरिणामित्वात् । Sadā gyātāshchitt vrittayastatprabhoḥ puruṣasyā parināmitvāt	— Inferior Temporal Gyrus:1 R
19	१९ न तत्त्वाभासं दृश्यत्वात् । Na tatsvābhāsam drishyatvāt	— Inferior Temporal Gyrus:2 L
20	२० एकसमये चोभयानवधारणम् । Ekasamaye chobhayānavadhāraṇam	— Inferior Temporal Gyrus:2 R
21	२१ चित्तान्तरदृश्ये बुद्धिबुद्धेरतिप्रसङ्गः स्मृतिसङ्करश्च । Chittāntaradrishye buddhi buddhe rati prasangah smṛiti sankarashch	— Middle Temporal Gyrus:1 L
22	२२ चित्तेरप्रतिसंक्रमायास्तदाकारापत्तौ स्वबुद्धिसंवेदनम् । Chiterapṛati samkramāyāstadākārāpattau sva buddhi samvedanam	— Middle Temporal Gyrus:1 R
23	२३ द्रष्टृदृश्योपरक्तं चित्तं सर्वार्थम् । Drashtri drishyoparakṭam chittam sarvārtham	— Middle Temporal Gyrus:2 L
24	२४ तदसंख्येयवासनाभिन्नमपि परार्थं संहत्यकारित्वात् । Tadasamkhyeya vāsanābhishchitramapi parārtham samhatya kāritvāt	— Middle Temporal Gyrus:2 R
25	२५ विशेषदर्शिनं आत्मभावभावनानिवृत्तिः । Vishesh darshin ātmabhāv bhāvanā nivṛtṭih	— Middle Temporal Gyrus:3 L
26	२६ तदा विवेकनिम्नं कैवल्यप्राग्भारं चित्तम् । Tadā vivek nimnam kaivalyapragbhāraṁ cittam	— Middle Temporal Gyrus:3 R
27	२७ तच्छिद्रेषु प्रत्ययान्तराणि संस्कारेभ्यः । Tacchidreshu pratyayāntarāṇi saṁskārebhyah	— Superior Temporal Gyrus:1 L
28	२८ हानमेषां क्लेशवदुक्तम् । Hānameṣāṁ kleśhavad uktam	— Superior Temporal Gyrus:1 R
29	२९ प्रसंख्यानेऽप्यकुसीदस्य सर्वथा विवेकख्यातेर्धर्ममेघः समाधिः । Prasamkhyānēpyakusīdasya sarvathā vivek khyāter dharm meghah samādhīh	— Superior Temporal Gyrus:2 L
30	३० ततः क्लेशकर्मनिवृत्तिः । Tatah kleśhakarmānivṛtṭih	— Superior Temporal Gyrus:2 R

YOGA: Association Fibres

Yoga Sūtras - Chapter 4 (cont.)

Sanskrit text with transliteration	Location in anatomy
31 ३१ तदा सर्वावरणमलापेतस्य ज्ञानस्याऽऽनन्त्याज्ज्ञेयमल्पम् । Tadā sarvāvaranamalāpetasya gyānasyā''nāntyājgyeyamalpam	— Superior Temporal Gyrus: 3 L
32 ३२ ततः कृतार्थानां परिणामक्रमसमाप्तिगुणानाम् । Tatah kritārthānām parināmakramasamāptirgunānām	— Anterior Temporal Gyrus: 3 R
33 ३३ क्षणप्रतियोगी परिणामापरान्तनिर्ग्राह्यः क्रमः । Kshanapratiyogī parināmāparāntanirgrāhyah kramah	— Anterior Commissure
34 ३४ पुरुषार्थशून्यानां गुणानां प्रतिप्रसवः कैवल्यं स्वरूपप्रतिष्ठा वा- चितिशक्तिरिति । Purushārthashūnyānām gunānām pratiprasavah kaivalyam svarūpapatishthā vā citishaktiriti	— Corpus Callosum, Temporo-Temporal Part

महर्षि पतञ्जलि प्रणीत योगदर्शने चतुर्थः कैवल्यपादः ।
 Maharshi Patanjali pranīta yogadarshane chaturthah kaivalyapādah
 समाप्तं पातञ्जलयोगदर्शनम् ।
 Samāptam Pātanjal Yogadarshanam

17. KARMA MĪMĀMSĀ: 12 Divisions of the Central Nervous System

Karma Mīmāṃsā represents consciousness with reference to the quality of **analysis**, which generates actor and action in silence. It has a predominantly Devatā quality. Karma Mīmāṃsā has one book with 12 chapters and 60 Pādas, or divisions.

*The Central
Nervous
System*

In the physiology, Karma Mīmāṃsā is represented by the integrated holistic functioning of the nervous system within the field of pure wakefulness, unbounded consciousness—the total **analysis** of all action and perception seen within wholeness. This occurs by means of all the different parts of the central nervous system projecting onto the cortical layers. The adult nervous system is divided into six anatomical regions, each of which is bilaterally paired. This forms 12 divisions. Each of these paired divisions arises from a distinct division of the neural tube.

These 12 divisions constitute the 12 chapters of Karma Mīmāṃsā, which encompasses the totality of action and silence—the whole range of activity, including total rest or silence. Karma Mīmāṃsā operates within the 12 divisions. Karma Mīmāṃsā involves the process of transformation, and therefore it corresponds to a functional level of consideration of the nervous system.

In embryonic development, the neural axis has three sections (corresponding to Rishi, Devatā, and Chhandas): forebrain, midbrain, hindbrain. The forebrain develops lateral pouches out of the vertical axis, and a vesicle in line with the axis; the lateral pouches become the telencephalon; and the midline vesicle forms the diencephalon.

Figure 68 shows the correspondence of the chapters and their Pādas in the nervous system, starting from the centre of the brain. The right side of the diencephalon is the first chapter, and the left side of the diencephalon will be the second chapter. Then the left telencephalon will be the third chapter, and the right telencephalon the fourth chapter. This is a rotating, full-circle connectivity of these levels of organization. Then, lower down on the right side is the mesencephalon (correlated with the fifth chapter), and further down the right metencephalon (correlated with the sixth chapter). From the right metencephalon, there is a crossing to the left myelencephalon (seventh chapter) and down to the left part of the spinal cord (associated with the eighth chapter). The following chapters are associated in sequence to the corresponding parts on the left side: left metencephalon (chapter nine), left mesencephalon (chapter 10), crossing to the right myelencephalon (chapter 11), and down to the right part of the spinal cord (chapter 12).

KARMA

12 Divisions of th

Left Side

3. Telencephalon (Cerebral hemisphere)

Karma Mīmāṃsā Chap. 3, 8 Pādas* (see note)

	First Sūtra of each corresponding Pād
• Frontal	१ अथातः शेषतल्लक्षणम् । १ अर्थाभिधानसामर्थ्यान्मन्त्रेषु शेषभावः स्यात्तस्मादुत्पत्तिसम्बन्धोऽर्थेन नित्यसंयोगात् ।
• Occipital	१ श्रुतेर्जाताधिकारः स्यात् । १ निवीतमिति मनुष्यधर्मः शब्दस्य तत्प्रधानत्वात् ।
• Temporal	१ आज्याञ्च सर्वसंयोगात् । १ सर्वार्थमप्रकरणात् ।
• Parietal	१ प्रकरणाविशेषादसंयुक्तं प्रधानस्य । १ स्वामिकर्म परिक्रयः कर्मणस्तदर्थत्वात् ।

2. Diencephalon

Karma Mīmāṃsā Chap. 2, 4 Pādas

	First Sūtra of each corresponding Pād
• Thalamus	१ भावार्थाः कर्मशब्दाः तेभ्यः क्रिया प्रतीयेतैष ह्यर्थो विधीयते ।
• Hypothalamus	१ शब्दान्तरं कर्मभेदः कृतानुबन्धत्वात् ।
• Subthalamus	१ गुणस्तु कृतसंयोगात् कर्मान्तरं प्रयोजयेत् संयोगस्याशेषभूतत्वात् ।
• Epithalamus	१ यावज्जीविकोऽभ्यासः कर्मधर्मः प्रकरणात् ।

9. Mesencephalon (Midbrain)

Karma Mīmāṃsā Chap. 9, 4 Pādas

	First Sūtra of each corresponding Pād
• Tectum	१ यज्ञकर्म प्रधानं तद्धि चोदनाभूतं तस्य द्रव्येषु संस्कारस्तत्प्रयुक्तस्तदर्थत्वात् ।
• Tegmentum	१ सामानि मन्त्रमेके स्मृत्युपदेशाभ्याम् ।
• Crura cerebri	१ प्रकृतौ यथोत्पत्तिवचनमर्थानां तथोत्तरस्यां ततौ तत्प्रकृतित्वादर्थं चाकार्यत्वात् ।
• Substantia nigra	१ षड्विंशतिरभ्यासेन पशुगणे तत्प्रकृतित्वाद् गुणस्य प्रविभक्तत्वादविकारो हि तासामकात्स्न्येननभिसम्बन्धो विकारान्न समासः स्यादसंयोगाच्च सर्वाभिः ।

10. Metencephalon (Pons-cerebellum)

Karma Mīmāṃsā Chap. 10, 8 Pādas

Pons	First Sūtra of each corresponding Pād
• Somatic sensory	१ विधेः प्रकरणान्तरातिदेशात् सर्वकर्म स्यात् ।
• Visceral sensory	१ कृष्णलेङ्गधर्मेऽलोपादपाकः स्यात् ।
• Somatic motor	१ विकृतौ शब्दवत्त्वात् प्रधानस्य गुणानामधिकोत्पत्तिः सन्निधानात् ।
• Visceral motor	१ प्रकृतिलिङ्गासंयोगात् कर्मसंस्कारं विकृतावधिकं स्यात् ।
Cerebellum	
• Nodulus	१ आनुपूर्व्यवतामेकदेशग्रहणेष्टागमवदन्त्यलोपः स्यात् ।
• Flocculus	१ एकज्ञस्थानि यज्ञे स्युः स्वाध्यायवत् ।
• Paleo-cerebellum	१ पशोरेकहविष्टवं समस्तचोदितत्वात् ।
• Neo-cerebellum	१ प्रतिषेधः प्रदेशेऽनारभ्यविधाने च प्राप्तप्रतिषिद्धत्वाद्विकल्पः स्यात् ।

7. Myelencephalon (Medulla)

Karma Mīmāṃsā Chap. 7, 4 Pādas

	First Sūtra of each corresponding Pād
• Somatic sensory	१ श्रुतिप्रमाणत्वाच्छेषाणां मुख्यभेदे यथाधिकारं भावः स्यात् ।
• Visceral sensory	१ साम्नोऽभिधानशब्देन प्रवृत्तिः स्याद्यथाशिष्टम् ।
• Somatic motor	१ उक्तं क्रियाभिधानं तत् श्रुतावन्यत्र विधिप्रदेशः स्यात् ।
• Visceral motor	१ इतिकर्तव्यताविधेर्यजतेः पूर्ववत्त्वम् ।

8. Spinal cord

Karma Mīmāṃsā Chap. 8, 4 Pādas

	First Sūtra of each corresponding Pād
• Cervical	१ अथ विशेषतल्लक्षणम् ।
• Thoracic	१ वाजिनेषु सोमपूर्वत्वं सौत्रामण्यां च ग्रहेषु ताच्छब्दात् ।
• Lumbar	१ हविर्गणे परमुत्तरस्य देशसामान्यात् ।
• Sacro-coccygeal	१ दर्विहोमो यज्ञाभिधानं होमसंयोगात् ।

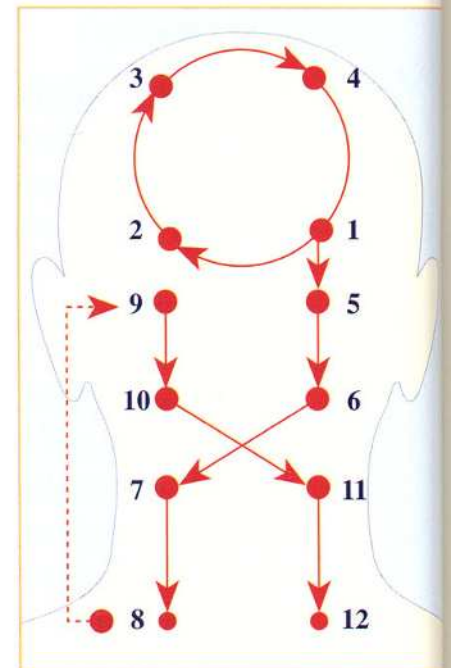
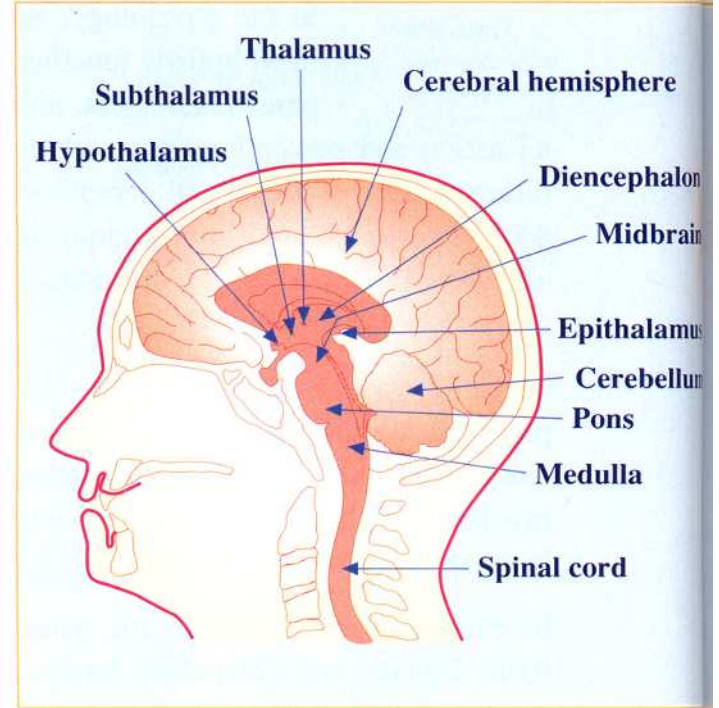
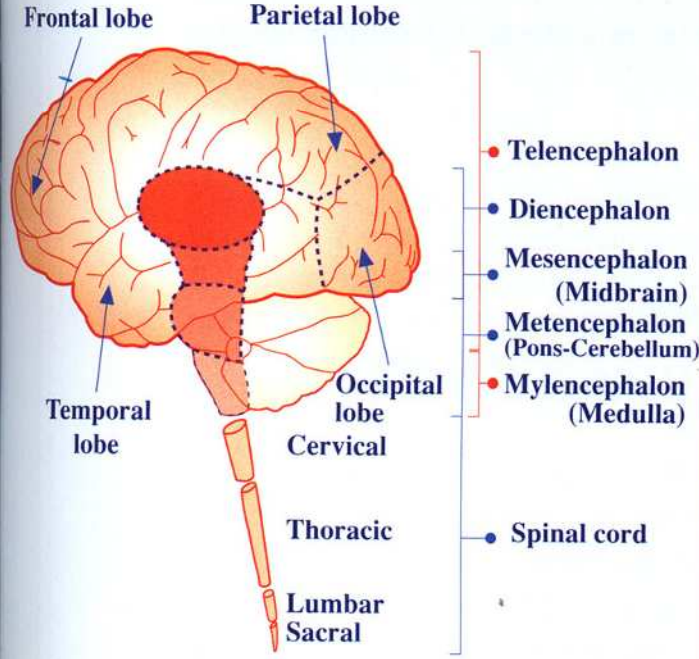


Figure 68 shows the different parts of the central nervous system corresponding to the 12 chapters and 60 Pādas of Karma Mīmāṃsā. The flow of chapters and Pādas follows a pattern, which is illustrated in the schematic diagram below the pictures.

MĪMĀMSĀ: Central Nervous System

Right Side



This schematic diagram shows how the 12 chapters of Karma Mīmāṃsā flow in the physiology.

4. Telencephalon (Cerebral hemisphere)

Karma Mīmāṃsā Chap. 4, 4 Pādas

First Sūtra of each corresponding Pād

- Frontal १ अथातः क्रत्वर्थपुरुषार्थयोजिज्ञासा ।
- Occipital १ स्वरुस्त्वनेकनिष्पत्तिः स्वकर्मशब्दत्वात् ।
- Temporal १ द्रव्यसंस्कारकर्मसु परार्थत्वात् फलश्रुतिरर्थवादः स्यात् ।
- Parietal १ प्रकरशब्दसामान्याद्योदनानामनङ्गत्वम् ।

1. Diencephalon

Karma Mīmāṃsā Chap. 1, 4 Pādas

First Sūtra of each corresponding Pād

- Thalamus १ अथातो धर्मजिज्ञासा ।
- Hypothalamus १ आम्नायस्य क्रियार्थत्वादानर्थक्यमतदर्शनां तस्मादनित्यमुच्यते ।
- Subthalamus १ धर्मस्य शब्दमूलत्वादशब्दमनपेक्ष्यं स्यात् ।
- Epithalamus १ उक्तं सामान्यायेदमर्थं तस्मात् सर्वं तदर्थं स्यात् ।

5. Mesencephalon (Midbrain)

Karma Mīmāṃsā Chap. 5, 4 Pādas

First Sūtra of each corresponding Pād

- Tectum १ श्रुतिलक्षणानुपूर्व्यं तत्प्रधानत्वात् ।
- Tegmentum १ सन्निपाते प्रधानानामेकैकस्य गुणानां सर्वकर्म स्यात् ।
- Crura cerebri १ विवृद्धिः कर्मभिदात् पृषदाज्यवत्तस्य तस्योपदिश्येत ।
- Substantia nigra १ क्रमको योऽर्थशब्दाभ्यां श्रुति विशेषादर्थपरत्वाच्च ।

6. Metencephalon (Pons-cerebellum)

Karma Mīmāṃsā Chap. 6, 8 Pādas

Pons

First Sūtra of each corresponding Pād

- Somatic sensory १ द्रव्याणां कर्मसंयोगे गुणत्वेनाऽभिसम्बन्धः ।
- Visceral sensory १ पुरुषार्थैकसिद्धित्वात् तस्य तस्याधिकारः स्यात् ।
- Somatic motor १ सर्वशक्तौ प्रवृत्तिः स्यात् तथाभूतोपदेशात् ।
- Visceral motor १ शेषाद् व्यवदाननाशे स्यात्तदर्थतवात् ।
- Cerebellum
- Nodulus १ अभ्युदये कालापरधादिज्याचोदना स्यात् यथा पञ्चशरावे ।
- Flocculus १ सन्निपातेऽवैगुण्यात् प्रकृतिवत् तुल्यकल्पा यजेरन् ।
- Paleo-cerebellum १ स्वदाने सर्वमविशेषात् ।
- Neo-cerebellum १ इष्टिपूर्वत्वादक्रतुशेषो होमः संस्कृतेऽग्निषु स्यादपूर्वोऽप्याधानस्य सर्वशेषात्

11. Myelencephalon (Medulla)

Karma Mīmāṃsā Chap. 11, 4 Pādas

First Sūtra of each corresponding Pād

- Somatic sensory १ प्रयोजनाभिसम्बन्धात् पृथक् सतां ततः स्यादैककर्म्यमेकशब्दाभिसंयोगात् ।
- Visceral sensory १ एकदेशकालकर्तृत्वं मुख्यानामेकशब्दोपदेशात् ।
- Somatic motor १ अङ्गानां मुख्यकालत्वाद्ब्रह्मदान्यकालत्वम् ।
- Visceral motor १ चोदनैकत्वाद्वाजसुयेऽनुक्तदेशकालानां समवायात्तन्मद्धानि ।

12. Spinal cord

Karma Mīmāṃsā Chap. 12, 4 Pādas

First Sūtra of each corresponding Pād

- Cervical १ तन्निवसमवाये चोदनातः समानानामेकतन्त्रत्वमतुल्येषु तु भेदः विधिप्रक्रमतादर्थ्यात् तादर्थ्यं श्रुतिकालनिर्देशात् ।
- Thoracic १ विहारो लौकिकानामर्थं साधयेत् प्रमुत्वात् ।
- Lumbar १ विश्वजिति वत्सत्वङ्नामधेयाऽहतमितरथा तन्त्रभूयस्त्वादहतं स्यात् ।
- Sacro-coccygeal १ जपाश्चाकर्मयुक्ताः स्तुत्याशीरभिधानं च याज मानेसु समुच्चयः स्यादादीः पृथक्त्वात् ।

* Because of left brain dominance (with respect to motor function in the majority of people), the left telencephalon assumes a more important role in the field of speech and action and, therefore, is given more Pādas.

*The Cerebral
Cortex*

The cerebral cortex, in which the finest conscious expressions are integrated, can also be seen as the field of Karma Mīmāṃsā, or analysis of action and perception. The 12 parts of the cortex can be viewed as corresponding to the 12 chapters of Karma Mīmāṃsā. These are (left and right): frontal, occipital, parietal, temporal, and limbic lobes, and the insula. It can be noted that the chapters are structured on the basis of four (or a multiple of four) Pādas, or divisions, each. Within the cortical layers, there are four main layers which project outputs from the cortex. These are Layers II, III, V, and VI, and they can be understood as the layers related to analysis of action (Karma Mīmāṃsā), corresponding to the four Pādas.

18. VEDĀNTA: Integrated Functioning of the Central Nervous System

Vedānta represents the holistic quality of self-referral consciousness—that total quality of consciousness which is more than the collection of the parts of consciousness—the full unfoldment of the Self—**I-ness** (the Transcendent)—identifying itself with both qualities of consciousness, unity and diversity. Vedānta has a predominantly Ṛishi quality. It has one book, with four chapters, 16 divisions, and 192 subdivisions.

*The Integrated
Functioning of
the Nervous
System*

In the physiology, Vedānta is expressed by the totality of the integrated functioning of the nervous system and the whole physiology. At the same time, the most highlighted functions are those that integrate Yoga, Karma Mīmāṃsā, and Nyāya. Vedānta has one book comprising the unity quality embodied in the highest neocortical layer. It is that quality of oneness and **I-ness**, which could be represented by the plexiform layer of the cerebral cortex. The integration of the various aspects of functioning of the whole physiology in its gaps, cells, neurons, organs, and organ systems is expressed in Vedānta.

The individual aspects of neuronal activity, arising from various levels of integration, give the possibility of dividing Vedānta into four chapters, 16 divisions, and 192 Adhikaraṇas (subdivisions). The four chapters correspond to the four lobes of the cerebral cortex described in Yoga, the 16 divisions correspond to the 16 values, or nuclei found in Nyāya, and the 192 Adhikaraṇas correspond to the 192 Sūktas of the 1st and 10th Maṇḍalas of Ṛk Veda (see Figures 69a-c). The ability of Vedānta to produce a holistic experience gives it a Ṛishi quality.

VEDĀNTA: Integrated Functioning of the Central Nervous System

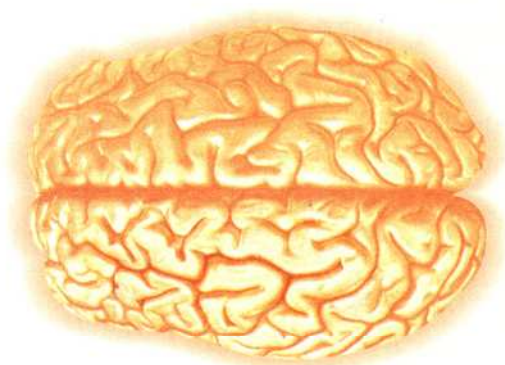


Figure 69a: This is a top view of the brain. The first layer of the cerebral cortex covers the surface of the brain (see Figure 82). This layer corresponds to the holistic quality of Vedānta.



Figure 69b: The four lobes of the cerebral cortex (see Figure 58) in their integrated functioning correspond to the four chapters of Vedānta.

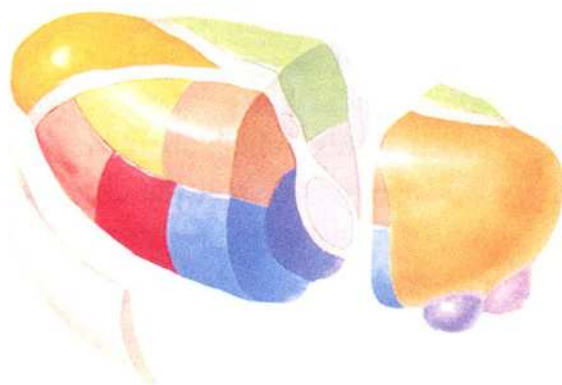


Figure 69c: The 16 nuclei of the thalamus in their integrated functioning correspond to the 16 divisions of Vedānta.

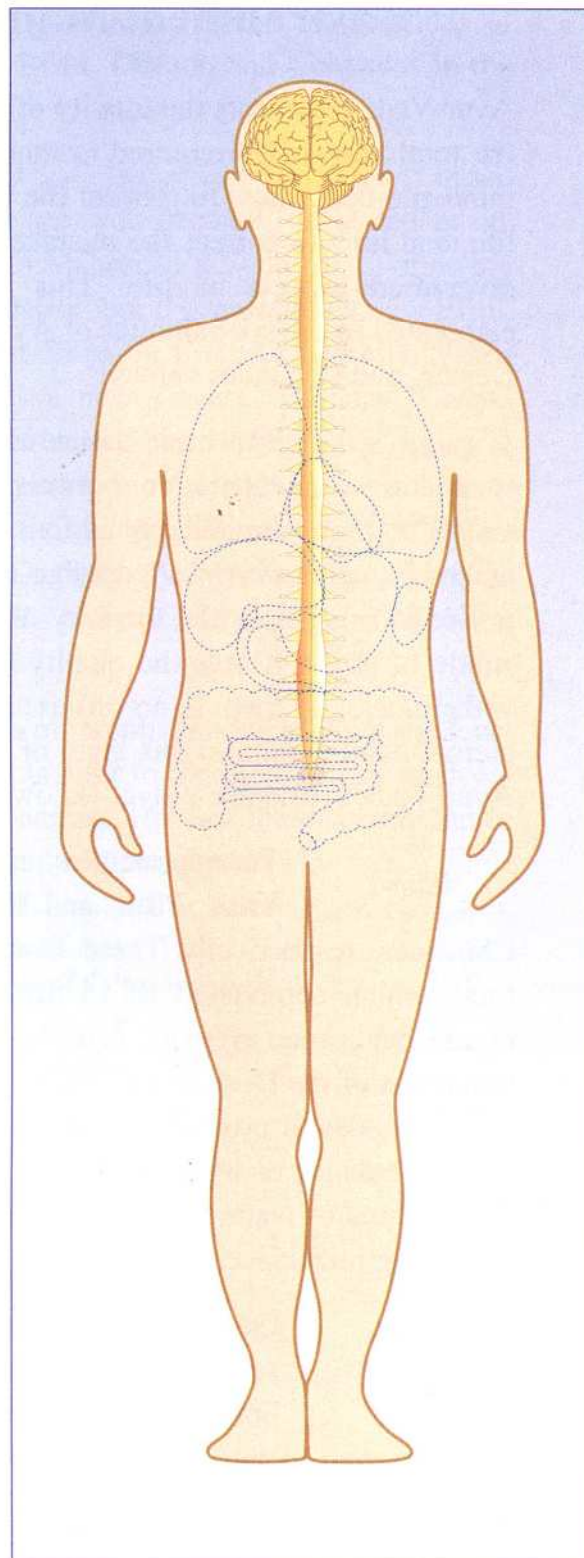


Figure 69d: The 192 components of the central nervous system described under Ṛk Veda (see Chapter IV, Figures 14 and 16–18) correspond to the 192 Adhikaraṇas of Vedānta.

19-24. ĀYUR-VEDA:

Total Activity of the Physiology, Mind, Body, and Environment Maintained in Perfect Balance

Āyur-Veda represents the totality of life. The books and chapters of Āyur-Veda give the total knowledge required to maintain the holistic balance of the functioning of mind and body: how to prevent the loss of memory of the unbounded, pure level of life, and how to correct the mistake of the intellect which identifies itself with the diversified aspects of life. This total **balancing** quality of consciousness is elaborated in the six Saṃhitās of Āyur-Veda, forming a self-sufficient loop of Ṛishi, Devatā, and Chhandas values.

*Correction
of Pragyā
Aparādhā*

The basic theme of Āyur-Veda is the elimination of the sense of separation between the unbounded, pure Self—Ātmā—and the limited expressions of the relative. This separation that the intellect makes is called Pragyā Aparādhā, or mistake of the intellect. Āyur-Veda has the power to bring back the memory of the Self to each level of the physiology, from subtle to gross. It sees the quality of point and the quality of infinity, all in pure wakefulness, so there is no difference between point and infinity of life. Life is an eternal continuum and this level of understanding is the knowledge of Āyur-Veda. Āyur-Veda is Brahma Vidya—knowledge of totality.

Doshas

Three principles, called Doshas, are basic to Āyur-Veda. They are **Vāta**, **Pitta**, and **Kapha**. They correspond to Ṛishi, Devatā, and Chhandas, respectively. These Doshas have 5 **subdoshas** or subdivisions, 15 in total, which correspond to 15 different physiological and anatomical structures, organs, and organ systems. Āyur-Veda describes all possible combinations and permutations of the Doshas with their subdivisions and their relations to Ṛishi, Devatā, and Chhandas. It provides a simple method, through pulse diagnosis, to detect their state of balance or imbalance, with respect to every individual's physiology and to the rhythms of Nature. Āyur-Veda simplifies the whole process of diagnosing and correcting imbalance.

*Dhātus,
Agnis, and
Srotas*

Other aspects of Āyur-Veda include detailed descriptions of the seven types of tissues of the body, called **Dhātus**; the 13 metabolic-neuroendocrine principles called **Agnis** (which could be seen to correspond to the 13 factors described above under Nirukta); and the channels called **Srotas** through which nutrition, blood, lymph, hormones, etc., are distributed throughout the body.

*All the
Components
of the
Physiology*

In this manner, we find described in Āyur-Veda all the components of the physiology, and all possible physiological and environmental factors that can contribute to the maintenance of **balance** and allow the experience of bliss.

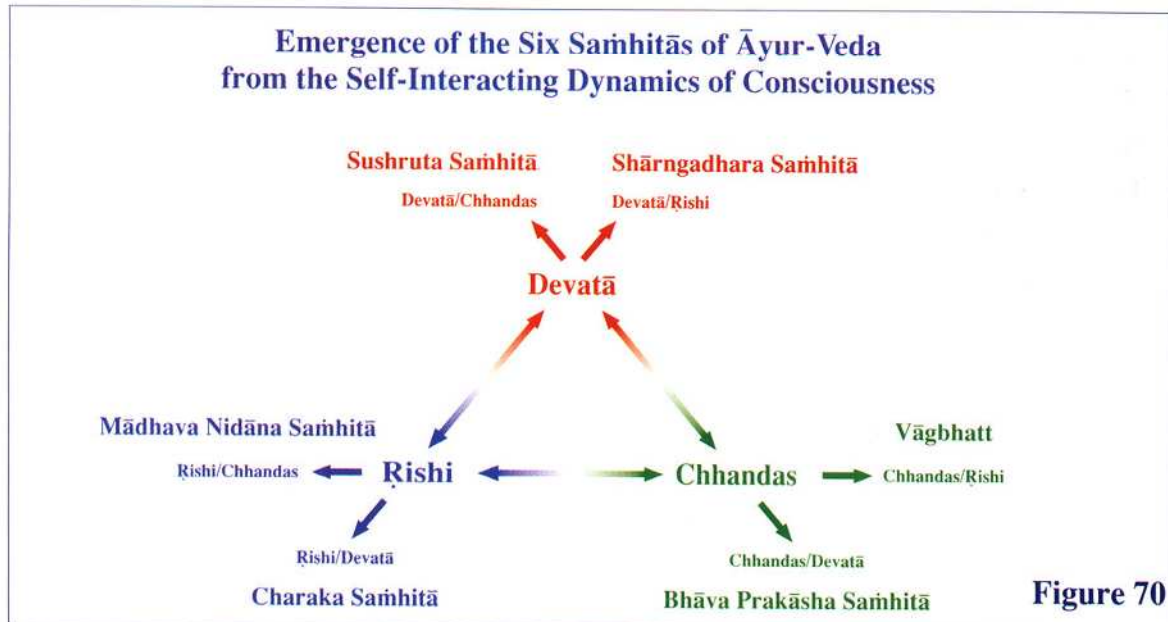
*Āyur-Veda—
Science of Life*

In the past 38 years, His Holiness Maharishi Mahesh Yogi has brought to light the profound knowledge of Āyur-Veda as a science of wholeness of life, to create balance and perfect health in the individual and society. Maharishi describes the emergence of the six Saṁhitās of Āyur-Veda as resulting from the interaction of Ṛishi, Devatā, and Chhandas in the following way:

*Emergence of
the 6 Saṁhitās
of Āyur-Veda*

When Devatā* looks at Ṛishi, Devatā becomes Ṛishi. This is based on the principle of 'What you see, you become', as stated in the Yoga Sūtras and as portrayed in Maharishi's Veda Līlā. Following this principle, Devatā looking at Ṛishi becomes Ṛishi, but it is certainly a new Ṛishi. The new Ṛishi emerging is represented in Āyur-Veda by Charaka Saṁhitā. When Chhandas looks at Devatā, Chhandas becomes a new Devatā. The new Devatā emerging is represented in Āyur-Veda by Sushruta Saṁhitā. When Ṛishi looks at Chhandas, a new Chhandas emerges, represented in Āyur-Veda as Vāgbhatt Saṁhitā. When Devatā looks at Chhandas, the Chhandas that emerges is Bhāva Prakāsha Saṁhitā. When Ṛishi looks at Devatā, the Devatā emerging is Shārngadhara Saṁhitā; and finally when Chhandas looks at Ṛishi, the new Ṛishi that emerges is Mādhava Nidāna Saṁhitā (see Figure 70).

The six Saṁhitās of Āyur-Veda cover all aspects of the physiology at the basic level of cell tissues and organs. The first three Saṁhitās refer to the three sets of embryologic tissues forming all the organs and organ systems. The last three correspond to the three divisions of a cell: nucleus, cell body, and cell membrane.



* When one puts one's attention on an object, the object permeates one's consciousness. If one is looking at a flower, for example, the flower predominates in one's awareness. The observer's consciousness coming out of the pure awareness of the Self, identifies itself with the object of perception. It is as if the observer had become the flower.

In a state of Unity Consciousness, the Self sees only the Self in everything and is therefore never changed by any process of observation. If you see anything other than the Self, then during that moment of perception, your awareness has taken that specific focus.

19. CHARAKA: Mesodermal Tissues and Organs

Charaka Samhitā represents the **holding together** (cha) of Ra and Ka—dynamism and silence. Its quality is **nourishing and supporting**. In the physiology, it corresponds to all the tissues and organs formed by the embryologic mesoderm. From the mesoderm are formed the skeleton, muscles, and connective tissues, which hold the different parts of the body together and give support to the whole physiology. The heart and blood vessels are also formed by the mesoderm. They act as the basic nourishing value, which is also a quality of Charaka. The divisions and subdivisions of Charaka Samhitā correspond to the basic organization and structure of the mesodermal tissues and organs.

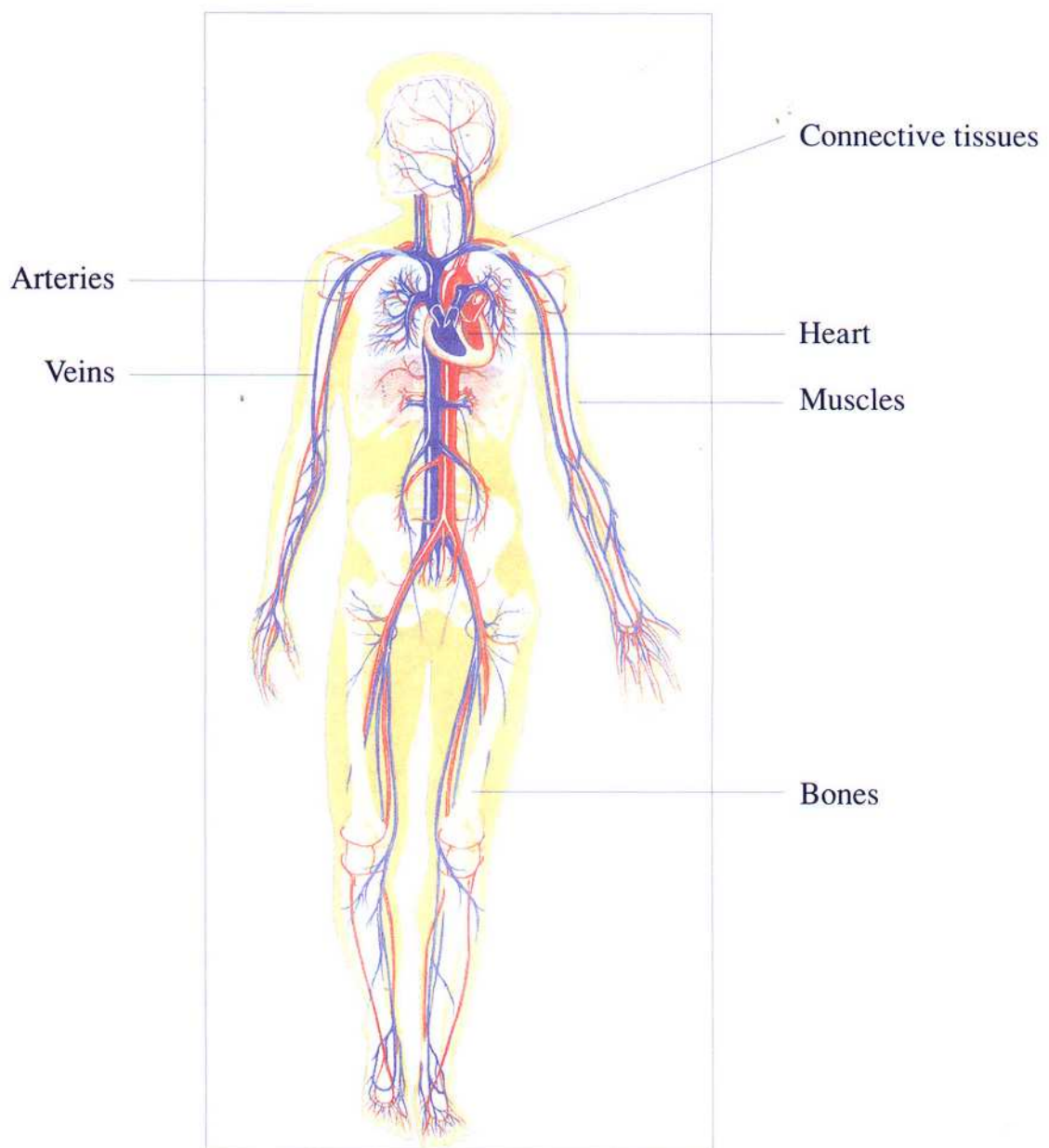


Figure 71 shows some of the mesodermal tissues and organs. They include: connective tissues, muscles, bones, the heart, arteries, and veins. They correspond to the **holding together, nourishing, and supporting** qualities of Charaka.

20. SUSHRUTA: Endodermal Tissues and Organs

Sushruta Samhitā represents the quality of **balancing**. In the physiology, Sushruta Samhitā corresponds to the tissues and organs formed by the endoderm. They include the gut, the lungs, the liver, the pancreas, the thyroid, and the thymus. These organs maintain different aspects of the physiology in balance. For example, the lungs maintain oxygen/carbon dioxide balance in the tissues; the gut glands and the liver balance the amount of nutrients that are needed in the blood and tissues; the pancreas balances the amount of sugar; and the thyroid keeps metabolism in proper balance. The divisions and subdivisions of Sushruta Samhitā correspond to the basic organization and structure of the endodermal tissues and organs.

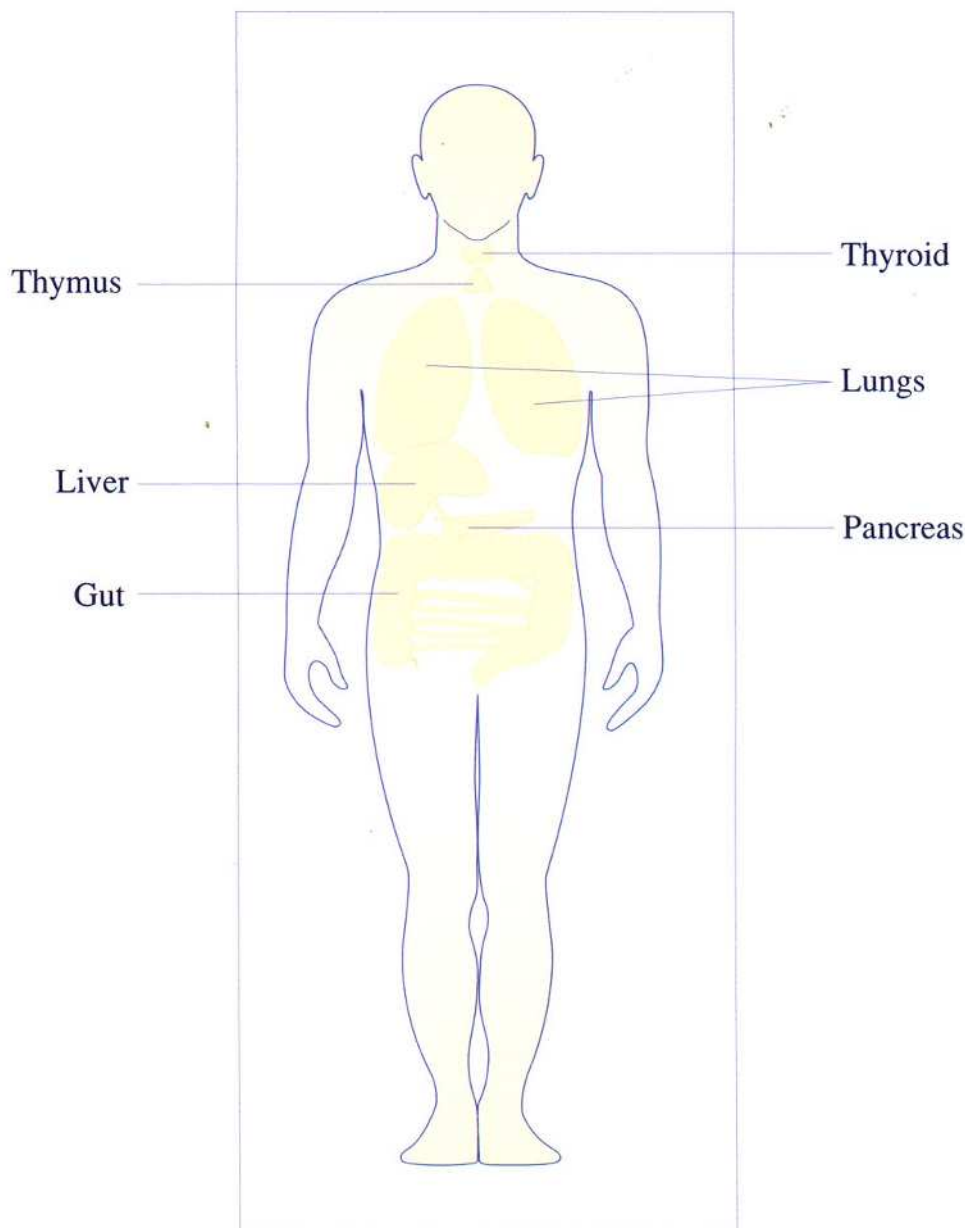
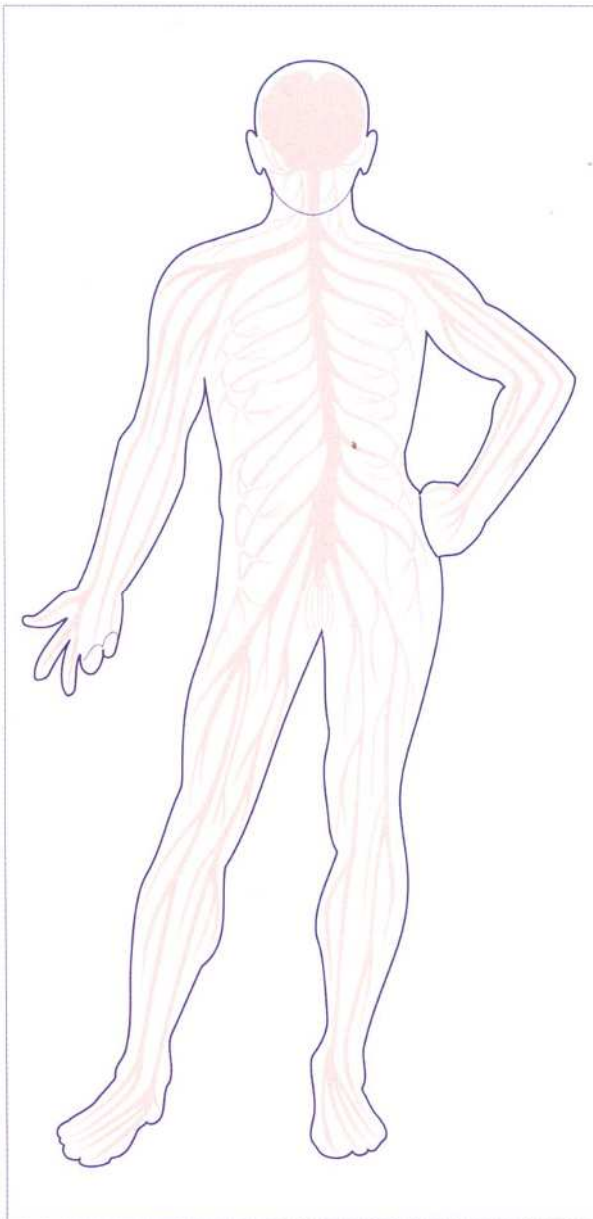


Figure 72 shows some of the endodermal tissues and organs. These include the lungs, the liver, the intestines, the pancreas, and the thyroid. They correspond to the **balancing** quality of Sushruta.

21. VĀGBHATT: Ectodermal Tissues and Organs

Vāgbhatt represents the quality of **communication and eloquence**. In the physiology it corresponds to the tissues and organs of ectodermal origin. These include the entire nervous system, the skin, and the lens of the eye. The nervous system is the seat of all communication and eloquence. The skin is the interface with the outside world, it receives through its receptors information about the environment, and therefore also plays an important role in communication. The divisions and subdivisions of Vāgbhatt Samhitā correspond to the basic organization and structure of the ectodermal tissues and organs.



Nervous System



Skin

Figure 73 shows some of the ectodermal tissues and organs. The nervous system and skin fulfil the role of **communication and eloquence**.

22. BHĀVA PRAKĀSHA: Cell Nucleus

Bhāva Prakāsha Samhitā represents the **enlightening** quality of consciousness. It is represented in the physiology by the cell nucleus. The cell nucleus contains the genetic material that guides all cellular activity and growth. The DNA in the cell nucleus contains all the knowledge about all cycles, cell shape, specification, and response to various conditions. It maintains the activity of the cell in harmony with all other cells. It ensures orderliness and balance. This is the 'enlightening' quality of the cell nucleus for all cells and tissues of the body.

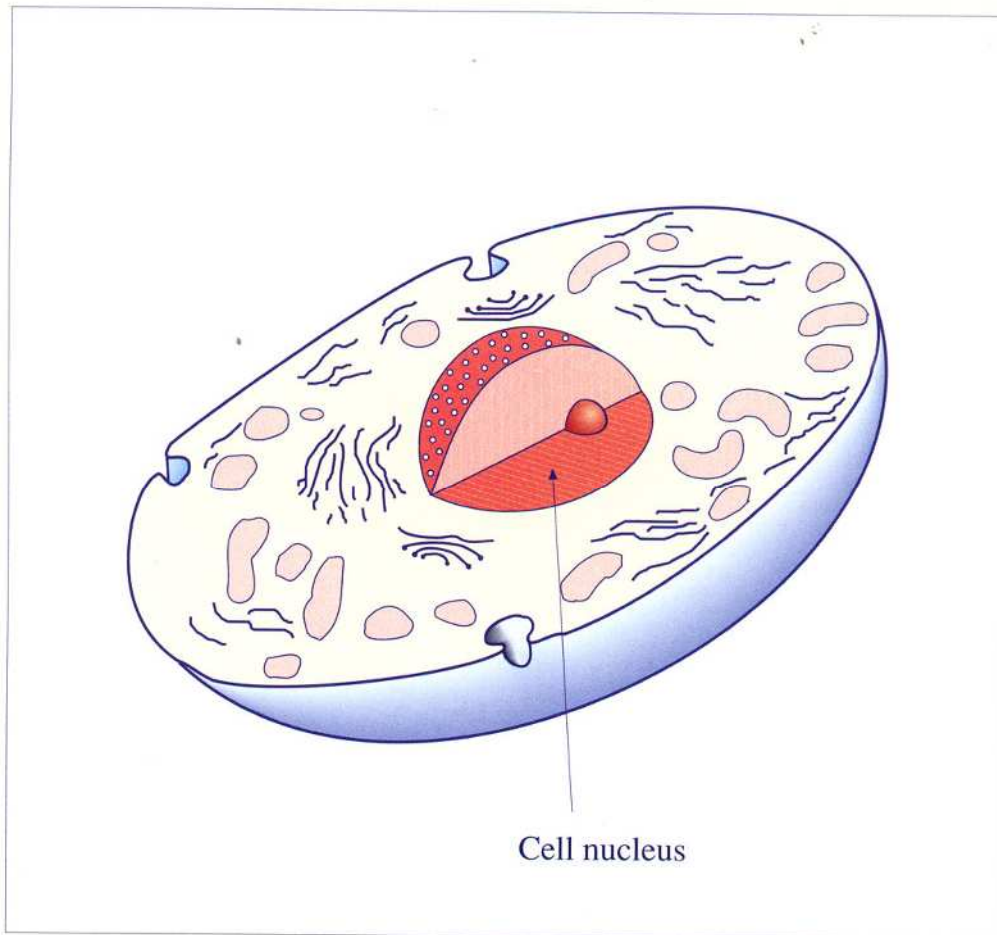


Figure 74 shows a cell with the cell nucleus in its centre. The cell nucleus corresponds to Bhāva Prakāsha.

23. SHĀRNGADHARA: Cytoplasm and Cytoskeleton

Shārngadhara Samhitā represents the **synthesizing** value of consciousness. In the physiology, it is represented by the cell cytoplasm and cytoskeleton. The subcellular organelles include the endoplasmic reticulum, which is responsible for membrane synthesis, the synthesis of proteins and lipids for cell organelles, and for export and detoxification reactions. Other organelles are also involved in various aspects of cell metabolism, energy conservation, and modification and sorting of protein.

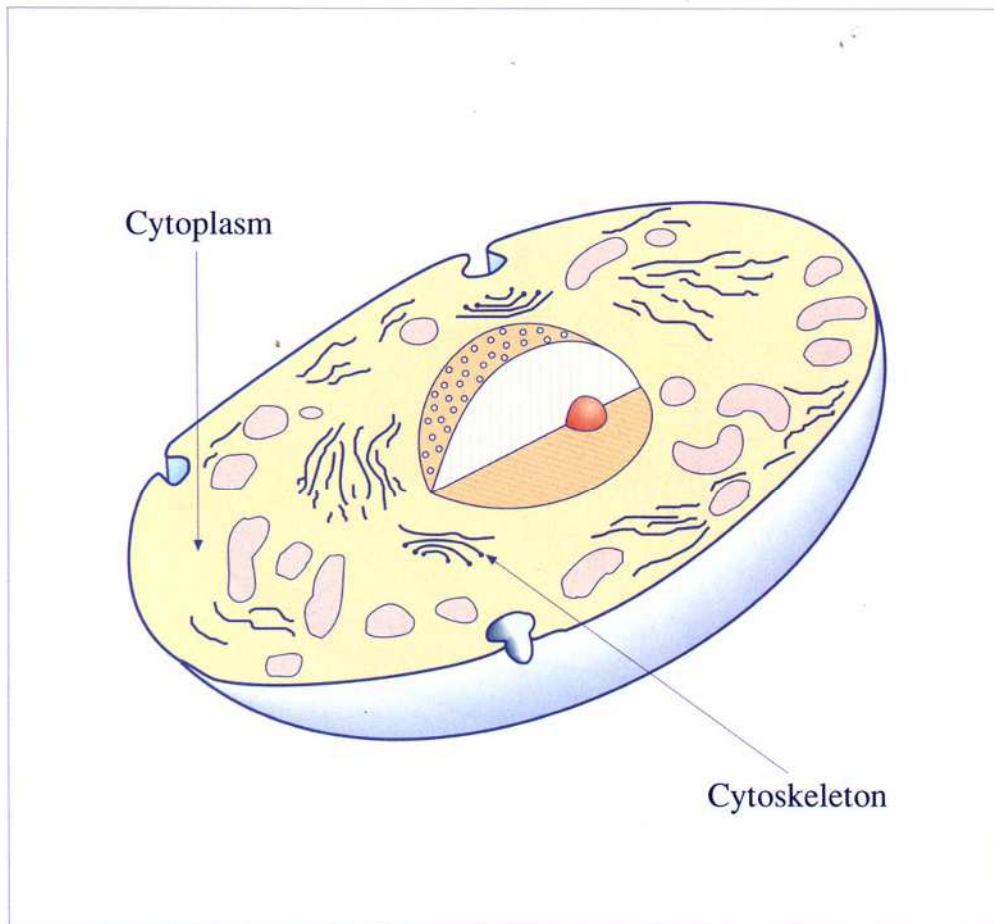


Figure 75 shows a cell with its cytoplasm, cytoskeleton, and organelles—corresponding to Shārngadhara.

24. MĀDHAVA NIDĀNA: Cell Membrane

Mādhava Nidāna Samhitā represents the **diagnosing**, detecting, and recognizing value of consciousness. It is represented in the physiology by the cell membrane. The cell membrane contains the receptors of the cell, which detect and recognize molecules coming into contact with the cell. The cell evaluates the significance of these molecules for its activity by means of the response generated by the cell membrane receptors. It is the diagnostic specialty of the cell membrane that makes it correspond to Mādhava Nidāna.

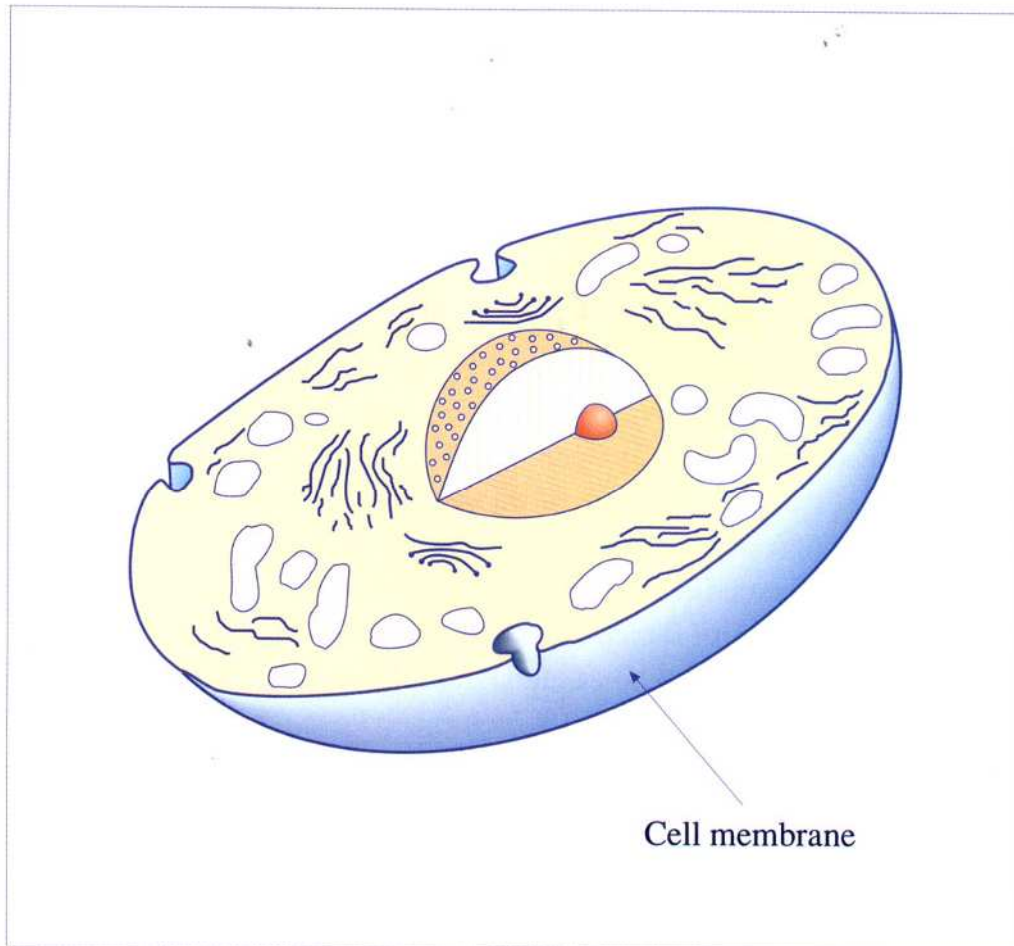


Figure 76 shows a cell with its cell membrane, which corresponds to Mādhava Nidāna.

25. SMṚITI: Memory Systems and Reflexes

Smṛiti represents the structure of intelligence in terms of the display of the total potential of the observer (Rishi), from individual potential to cosmic potential—from point to infinity—with reference to the **memory** quality of consciousness. It is that value that ensures spontaneous right action on the basis of a holistic value of memory, which simultaneously and spontaneously computes all the laws of Nature and ensures automation in the administration (spontaneous adequacy) of one's speech and action. Smṛiti has a predominantly Rishi quality.

*Memory Systems
and the
Reflex Arcs*

In the physiology, Smṛiti is represented by all the **memory** systems and reflex arcs, which allow action and perception to occur without the need for lengthy processing and analysis. This happens on the basis of complete knowledge, or memory, of what should be the appropriate response to any situation (for example adjusting one's posture in the event of a change in balance due to an unexpected pull or push, or pulling one's finger away from a hot object); as well as the appropriate response to more complex adjustments of social and traditional behaviour in the presence of changing circumstances or environmental demands.

*Perfect
Automation*

This perfect automation is the result of a full **memory** at the neuronal level and the establishment of the full range of possible connections throughout the nervous system. Smṛiti is lively in the synaptic gaps through their specific activity, proper structure, number, and connections (see Figures 7 and 13). This phenomenon of memory occurs in all the structures of the physiology, in the DNA of every cell, and particularly in the grey matter of the spinal cord and the brain stem, as well as in the hippocampus in the brain. These structures include: the 18 layers of Rexed (see Figure 80), the 18 cranial nerve nuclei (see Figure 77), and the 36 autonomic ganglia (see Figure 28), corresponding to the 18 Smṛitis and 18 Upa-Smṛitis. These structures, whose divisions are multiples of nine (9, 18, and 36) are similar in structure and function to Smṛiti, Purāṇa, and Itihāsa (see Figures 77-80).

SMṚITI: Memory Systems and Reflexes

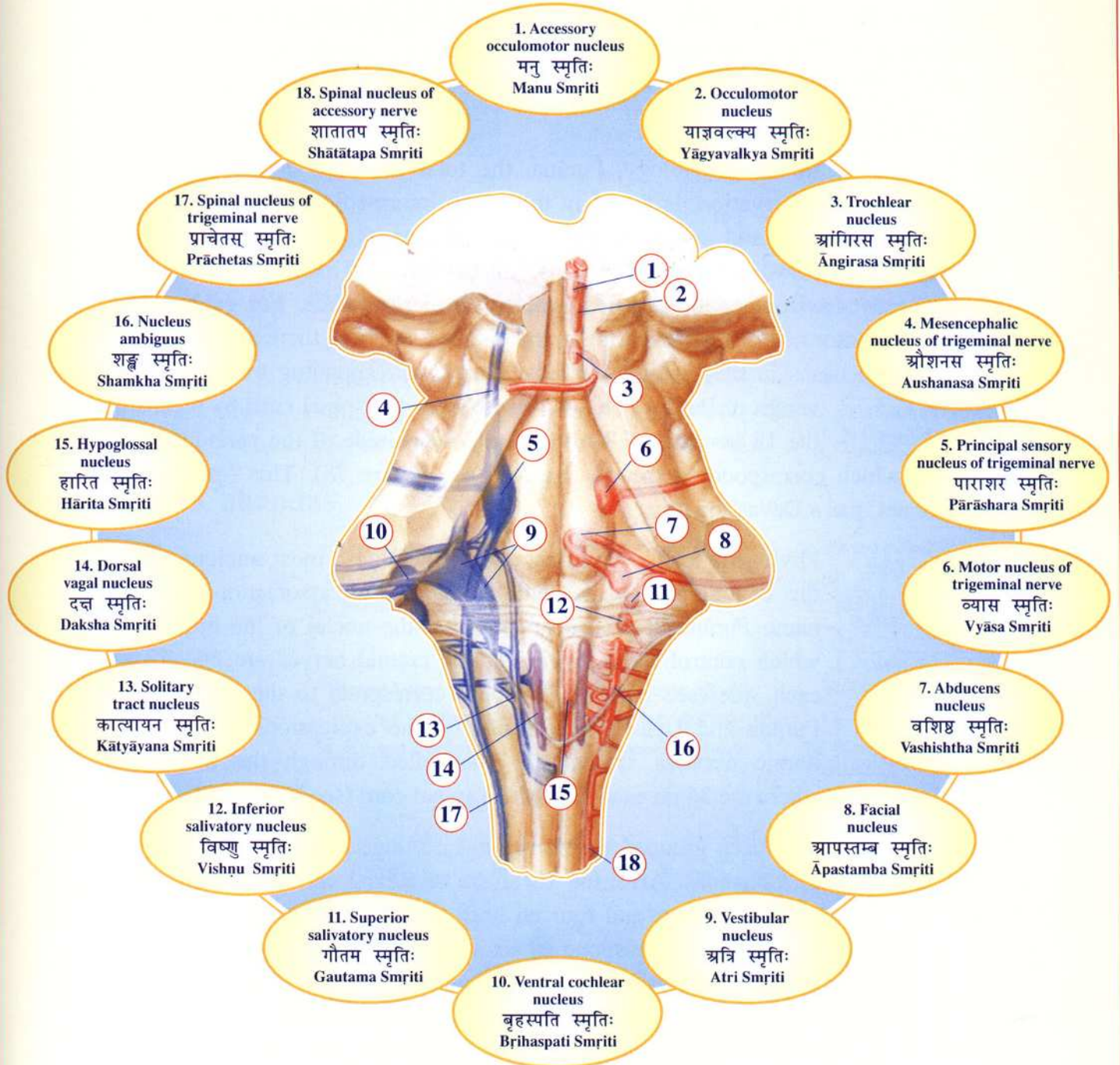


Figure 77 shows the 18 nuclei of the cranial nerves. They correspond to the 18 Smṛitis. The red-coloured nuclei are motor; the blue-coloured nuclei are sensory.

Note: All the nuclei are bilateral, but they are shown here only on one or the other side for clarity of the illustration.

26. PURĀṆA: Great Intermediate^{*} Net

Purāṇa represents the structure of intelligence in terms of the display of the total potential of the process of observation (Devatā), from individual potential to cosmic potential—from point to infinity—with reference to the **ancient, eternal** quality of consciousness. There are 18 main Purāṇas and 18 Upa-Purāṇas (subordinate Purāṇas) with about 400,000 verses total. The term *purāṇa* means ancient, eternal. It has a predominantly Devatā quality.

*The Great
Intermediate
Net*

In the physiology, Purāṇa, the total potential of the process of observation, is found in the 'great intermediate net', which monitors and processes the inputs and outputs of the central nervous

system; and provides a corrective response on the basis of intended action, individual needs, environmental demands, and actual performance. For each of the 3.5 million motor neurons participating in the display of action, there are an average of 400,000 neurons in the 'great intermediate net', corresponding to the 400,000

*Laminae
of Rexed*

verses of Purāṇa. This is organized in the spinal cord by means of the 18 laminae of Rexed (nine on each side of the periaqueductal lamina), which correspond to the 18 Purāṇas (see Figure 78). This 'great intermediate net' has a Devatā quality.

*Oldest Part
of the Central
Nervous System*

Phylogenetically, the spinal cord is the oldest, most **ancient** part of the central nervous system, explaining its association with the name *Purāṇa*. It is also notable that the nuclei of the brain stem

*Nuclei of the
Brain Stem*

which control the activities of the cranial nerves are 36—18 on each side (see Figure 77). These correspond to the 36 books of

*Autonomic
Ganglia*

Purāṇa and Upa-Purāṇa. Similarly, the expressions of the autonomic nervous system are channelled through the autonomic ganglia, of which there are 36 on each side of the spinal cord (see Figure 28).

The 18 Purāṇas have been grouped by Maharishi into three loops corresponding to Ṛishi, Devatā, and Chhandas. Also, the 18 layers of Rexed are specialized in the following way: layers one, two, and four on both sides of the spinal cord receive sensory inputs, and therefore correspond to six values of Ṛishi. Layers three, five, and seven are interconnecting layers and correspond to six values of Devatā. Layers six, eight, and nine are related to descending tracts and correspond to the six values of Chhandas. The correlation with the 18 Purāṇas is shown in Figure 78.

* The term 'great intermediate net' covers all the neurons and their fibres throughout the nervous system excluding the peripheral sensory and peripheral motor neurons.

PURĀṆA: Great Intermediate Net

Loop of Rishi



Loop of Devatā



Loop of Chhandas

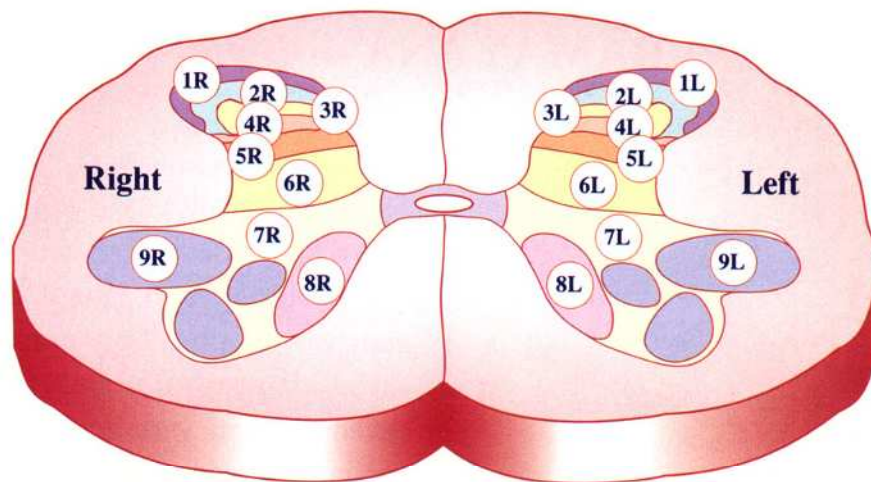


Figure 78 shows the layers of Rexed in the spinal cord and their correspondence with the 18 Purāṇas. Layers 1, 2, and 4 receive sensory inputs and correspond to the Rishi quality. Layers 3, 5, and 7 are interconnecting layers and correspond to the Devatā quality. Layers 6, 8, and 9 correspond to the motor aspect and have a Chhandas quality.

27. ITIHĀSA: Voluntary Motor and Sensory Projections

Itihāsa represents the structure of intelligence in terms of the display of the total potential of the object of observation (Chhandas), from its individual potential to its cosmic potential—from point to infinity. Itihāsa illustrates through living examples the total range of human experience, the full **blossoming** of totality—the display of Natural Law in thought and action. There are two major divisions in Itihāsa: Mahābhārata and Rāmāyaṇa. Mahābhārata has 18 books. Together they comprise about 3.5 million syllables. Itihāsa has a predominantly Chhandas quality.

*The Neuronal
Fibres which
Activate the
Musculo-
Skeletal System*

In the physiology, Mahābhārata is primarily represented by the neuronal fibres, which activate the musculo-skeletal system controlling speech and action. It is through them that **blossoming** of thoughts and feelings into speech and action happens. The cell bodies of the motor neurons in the spinal cord are located in layer nine of Rexed. The factors that initiate, modulate, or control the activity of the motor neurons are located in or connect through all the nine layers of Rexed on each side of the spinal cord. The 18 books of Mahābhārata encompass the total expressions inspired by the activities of the neurons in the 18 layers of Rexed (see Figure 80). Supporting the spinal cord and protecting it is the vertebral column. The structure of the vertebrae is reflected in the structure of the Rāmāyaṇa (see Figure 79).

The sensory and motor neurons related to the cranial nerves are also grouped in units of 18 within the cranial nerve nuclei; they also correspond to Itihāsa. (See Chapter V, Sections 25 and 26.) An estimate of the axons leaving the central nervous system to animate muscle fibres makes the total number of motor neurons about 3.5 million, which corresponds to the number of syllables in Itihāsa.

ITIĪHĀSA: RĀMĀYAṆA—Vertebral Column

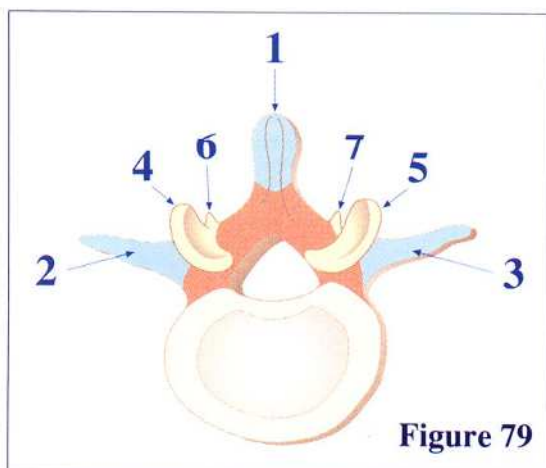


Figure 79

Figure 79 shows one vertebra with its seven processes numbered from 1 to 7, one posterior, two lateral, two superior, and two inferior. They correspond to the seven chapters of Rāmāyaṇa. There are seven cervical vertebrae which hold and support the neck and the head. They could also be seen to correspond to the seven chapters of Rāmāyaṇa.

ITIHAŚA: MAHĀBHĀRATA

Voluntary Motor and Sensory Projections

The 18 Laminae of Rexed in the Spinal Grey Matter

	ANATOMICAL NAME	18 BOOKS OF MAHĀBHĀRATA
1	Rexed Layer 1 L	१. आदि पर्व 1. Ādi Parva
2	Rexed Layer 1 R	२. सभा पर्व 2. Sabhā Parva
3	Rexed Layer 2 L	३. वन पर्व 3. Vana Parva
4	Rexed Layer 2 R	४. विराट पर्व 4. Virāṭa Parva
5	Rexed Layer 3 L	५. उद्योग पर्व 5. Udyoga Parva
6	Rexed Layer 3 R	६. भीष्म पर्व 6. Bhishma Parva
7	Rexed Layer 4 L	७. द्रोण पर्व 7. Droṇa Parva
8	Rexed Layer 4 R	८. कर्ण पर्व 8. Karṇa Parva
9	Rexed Layer 5 L	९. शल्य पर्व 9. Shalya Parva
10	Rexed Layer 5 R	१०. सौप्तिक पर्व 10. Sautpika Parva
11	Rexed Layer 6 L	११. स्त्री पर्व 11. Strī Parva
12	Rexed Layer 6 R	१२. शान्ति पर्व 12. Shānti Parva
13	Rexed Layer 7 L	१३. अनुशासनिक पर्व 13. Anūshāsika Parva
14	Rexed Layer 7 R	१४. आश्वमेधिक पर्व 14. Āshwamedhika Parva
15	Rexed Layer 8 L	१५. आश्रमवासिक पर्व 15. Āshramavāsika Parva
16	Rexed Layer 8 R	१६. मौसल पर्व 16. Mausala Parva
17	Rexed Layer 9 L	१७. महाप्रस्थानिक पर्व 17. Mahāprasthānika Parva
18	Rexed Layer 9 R	१८. स्वर्गरोहण पर्व 18. Swargārohaṇa Parva

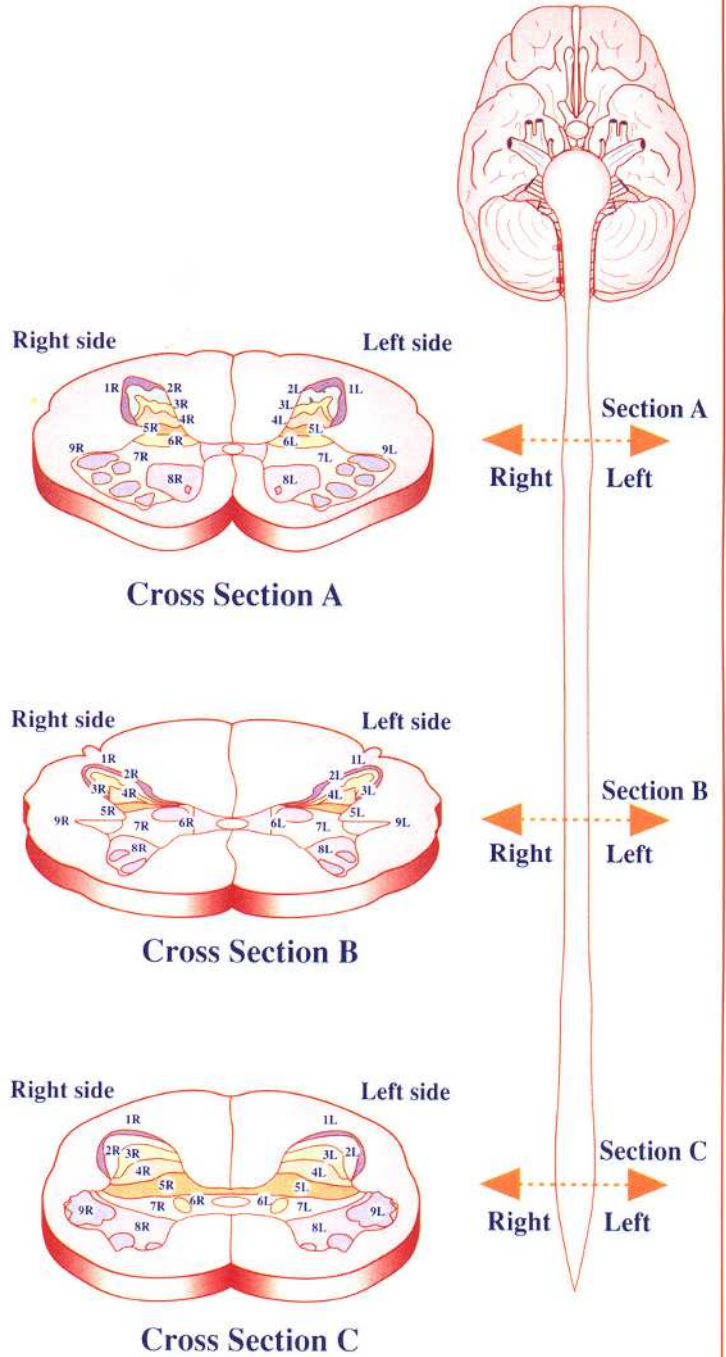


Figure 80 shows three cross sections of the spinal cord at three different levels. For illustration, the laminae of Rexed are coloured and numbered within the grey matter (coloured in pink). Each lamina of Rexed reflects the quality of a specific book of Mahābhārata.

28. BRĀHMAṆA: Descending Tracts of the Central Nervous System

Brāhmaṇa represents the **structuring** quality of self-referral consciousness within the Saṁhitā of self-referral consciousness. It elaborates that quality through the detailed structuring of all speech and action. It has a predominantly Chhandas quality. In the physiology, Brāhmaṇa is represented by the descending, or motor tracts. These structures contain within them the expressions of the sum total of all structuring of speech, action, and behaviour. The 18 main books of Brāhmaṇa correspond to the 18 major descending columns in the spinal cord (see Figure 81).

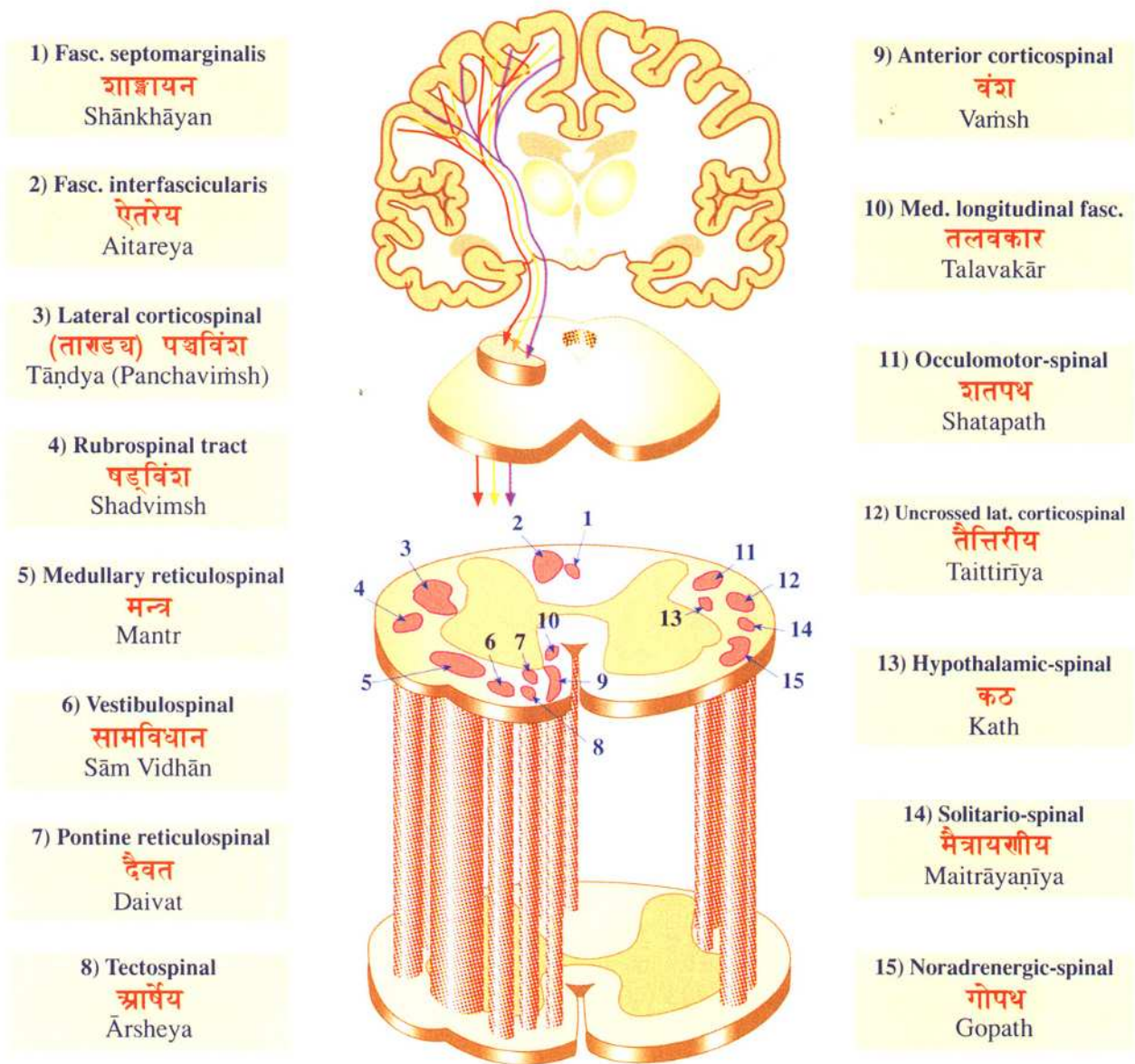


Figure 81 shows 15 main descending tracts. They correspond to 15 of the 18 main Brāhmaṇas, whose names are written here in Sanskrit with their transliteration. Other descending tracts, corresponding to the three remaining Brāhmaṇas (not shown in this picture), are the corticotectal, corticopontine, and corticobulbar tracts.

29. ĀRANYAKA: Fasciculi Proprii

Āraṇyaka represents the **stirring** quality of self-referral consciousness within the Saṁhitā quality of self-referral consciousness. It has predominantly a Devatā value. There are six main Āraṇyakas. Āraṇyaka illustrates the underlying mechanics of transformation and processing through living examples. Maharishi explains the term as being 'Arany' and 'AK', which means the churning of 'AK', (see Chapters I, II, and III). In the physiology, Āraṇyaka is represented by the spino-spinal fasciculi or fasciculi proprii. These are short, crossed and uncrossed, ascending and descending fibre systems, which begin and end within the spinal cord. All groups at various levels and within the same level of the spinal cord are interconnected with this intrinsic spinal pathway. The spinal cord represents most of the expressions of Ṛk Veda, which is the elaboration of 'AK' (see Chapter IV). The fasciculi proprii effectively constitute a whirlpool of activity interconnecting and **stirring** the structures, which represent 'AK' in its material expression. These fasciculi are arranged like a forest around the central grey matter ('Forest' is one way of translating Āraṇyaka from Sanskrit). They can be divided into six groups of fibres corresponding to the (right and left) ventral, lateral, and dorsal sections. These correspond to the six main divisions of Āraṇyaka.

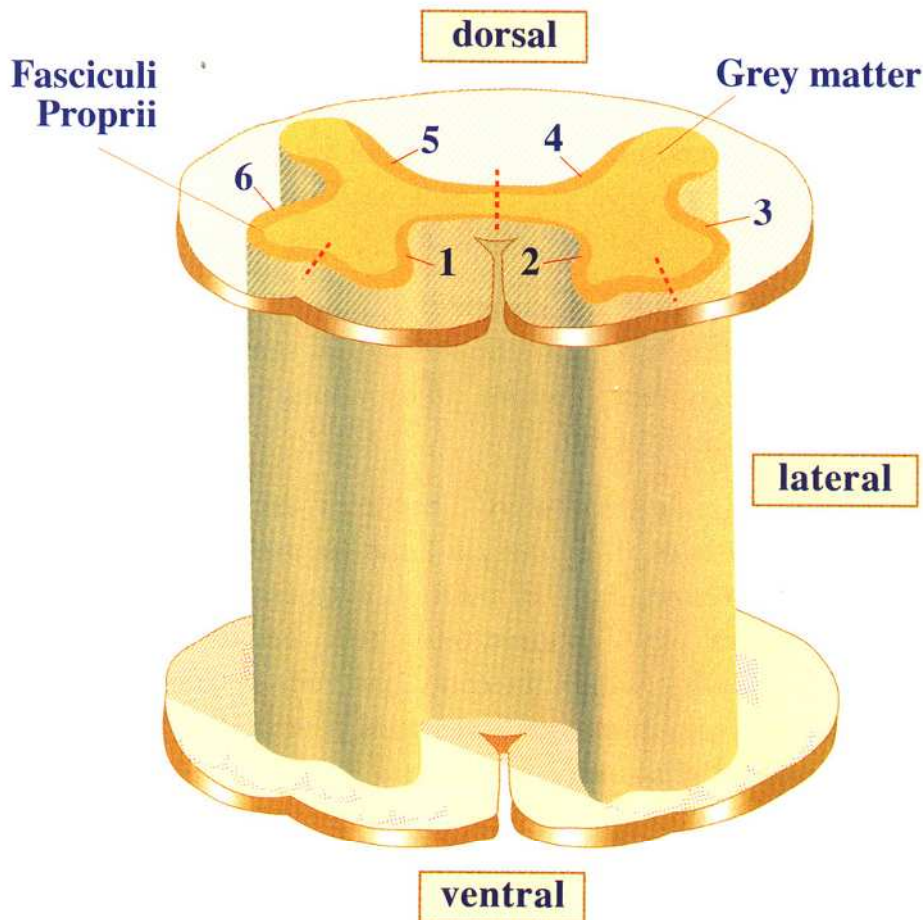


Figure 82 shows the six sets of fasciculi proprii around the grey matter of the spinal cord. They correspond to Āraṇyaka.

30. UPANISHAD:

Ascending Tracts of the Central Nervous System

Upanishad represents the **transcendental, self-referral** quality of consciousness. Upanishad shows everything to be Ātmā, or Self. It has a predominantly Ṛishi quality. There are about 300 Upanishads, with 14 main books, of which 11 are commented upon by Shankara. The term *upanishad* means 'to be or to sit near Veda.'

The Ascending Pathways

In the physiology, Upanishad is represented by the ascending pathways that bring every possible sensory experience to awareness. These pathways channel individual expressions to the higher cortical areas, where they are perceived in their holistic value. Our peripheral sensory receptors, in fact, do not perceive shapes or colours or harmony; they just detect excitatory or inhibitory stimuli from the outer environment. The ascending pathways, including the visual pathway, the auditory pathway, and all other sensory pathways, act as the channels that take every possible experience to the cortex, where it is integrated and perceived as a holistic value, such as a flower, a friend, a symphony, etc. For the man permanently established in pure consciousness—Cosmic Consciousness—this holistic value takes a more expanded level of wholeness, so that gradually, in time, every experience starts to be perceived in terms of the infinite, unbounded, **transcendental, self-referral** Ātmā. Therefore, the sensory pathways corresponding to Upanishad become the channels through which everything starts to be perceived in

Perception of Everything in Terms of the Self

terms of Ātmā. The ultimate purpose of every experience is the repeated exposure to localized point values and the gradual appreciation of these values as being expressions of one's Self. This is my Self. That also is my Self. All this is my Self—Ātmā.

Upanishad, therefore, represents those channels—the ascending tracts of the central nervous system—which allow the most refined levels of sensory experience to blossom into the ultimate experience, where point values are comprehended simultaneously in terms of oneness of life.

There are hundreds of ascending pathways. They are comparable in number to the approximately 300 Upanishads. They carry a large number of modalities of transmission of sensory information, sense of position, temperature, touch, muscle tension, etc. They are anatomically positioned in the area surrounding the grey matter (see Figure 83). Their position within the central nervous system, the main seat of Veda, is analogous to the idea of *upanishad*—sitting near Veda. The main tracts are 14 and they correspond to the 14 main Upanishads.

UPANISHAD: Ascending Tracts of the Central Nervous System

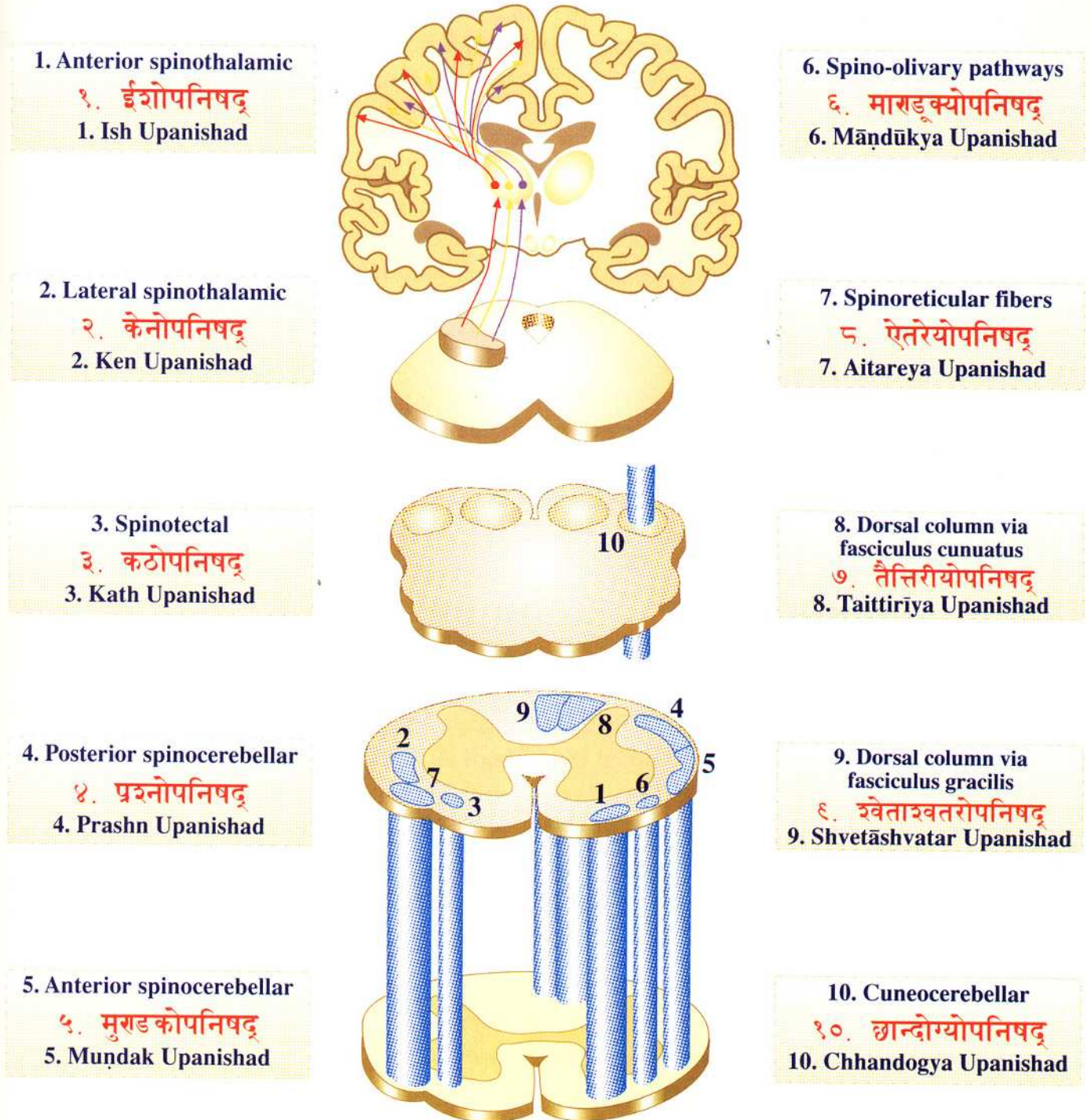


Figure 83 shows the most prominent groups of ascending tracts carrying the inputs of sensory information from the periphery (mainly touch and kinesthesia). Tracts carrying other sensory modalities (hearing, sight, taste and smell) are not shown here. They correspond to the main 14 Upanishads.

31-36. PRĀTISHĀKHYA: Cerebral Cortex

Prātishākhya represents that aspect of consciousness that puts all the parts together and creates a whole that is more than the collection of its parts. Prātishākhya constitutes the quality of consciousness in which **unity** is in **diversity**, in which every part is brought to light in terms of the whole—the connection of the structuring dynamics with the wholeness of consciousness.

Unity in
Diversity

Different branches of Veda and the Vedic Literature have been studied with different values; now all have to be made significant in the reality of the whole. All aspects of the Vedic Literature, demonstrating the structuring dynamics of Veda, are brought to light with reference to the wholeness of the Saṁhitā value while maintaining their specific character within the structuring dynamics of Natural Law.

The preceding thirty aspects of the Vedic Literature have brought to light the different structuring dynamics of Ṛk Veda; Prātishākhya puts them all in the context of Saṁhitā and brings out the holistic value of Natural Law, indicating that all the structuring dynamics maintain their self-referral nature; and in the ultimate sense all the aspects of Veda and the Vedic Literature, all the laws of administration, remaining functional within their specific mode, awake in their territory of influence, are fully alert in terms of their holistic basis as well.

There are six Prātishākhyas, forming the final six aspects of the Vedic Literature. They do not form a loop because each of them is bringing reality in terms of the source—looping is on the basis of emergence and submergence. Prātishākhya brings to awareness the reality of the ‘sap’ at the basis of all aspects of the tree—the whole tree is fundamentally nothing but sap. Whatever has Ṛishi value, is actually Saṁhitā; whatever is Devatā or Chhandas, actually is Saṁhita. Prātishākhya verifies all diversity; so there is actually no returning back, no two values—manifest and unmanifest. *Neh Nāmāsti Kinchan (Chhāndogya Upanishad 3.14.1)*; ‘Nothing exists but That’.

Grey Matter
of the
Cerebral Cortex

In the physiology, Prātishākhya is represented by the grey matter of the cerebral cortex. This is where all diverse expressions, all the parts of knowledge, are integrated to form a wholeness that is more than the collection of its parts. The full potential of the cerebral cortex emerges when its **holistic** functioning sustains the experience of pure, unbounded consciousness in all aspects of perception, thought, and action. Totality and point are seen together; all points are seen in terms of totality—one unbounded ocean of consciousness in motion—**unity in diversity**. The six layers of the grey matter of the cerebral cortex correspond to the six sections of Prātishākhya.

31. ṚK VEDA PRĀTISHĀKHYA: Plexiform Layer, Cerebral Cortex Layer I

Ṛk Veda Prātishākhya is the holistic, transcendental aspect of wholeness itself—totally integrated, with every point in infinity, and infinity in every point. Ṛk Veda Prātishākhya represents the **all-pervading field of consciousness**. Layer I of the cerebral cortex—the plexiform layer—does not send projections outside itself, and it receives projections from all other layers. It is self-referral wholeness, corresponding to Ṛk Veda Prātishākhya.

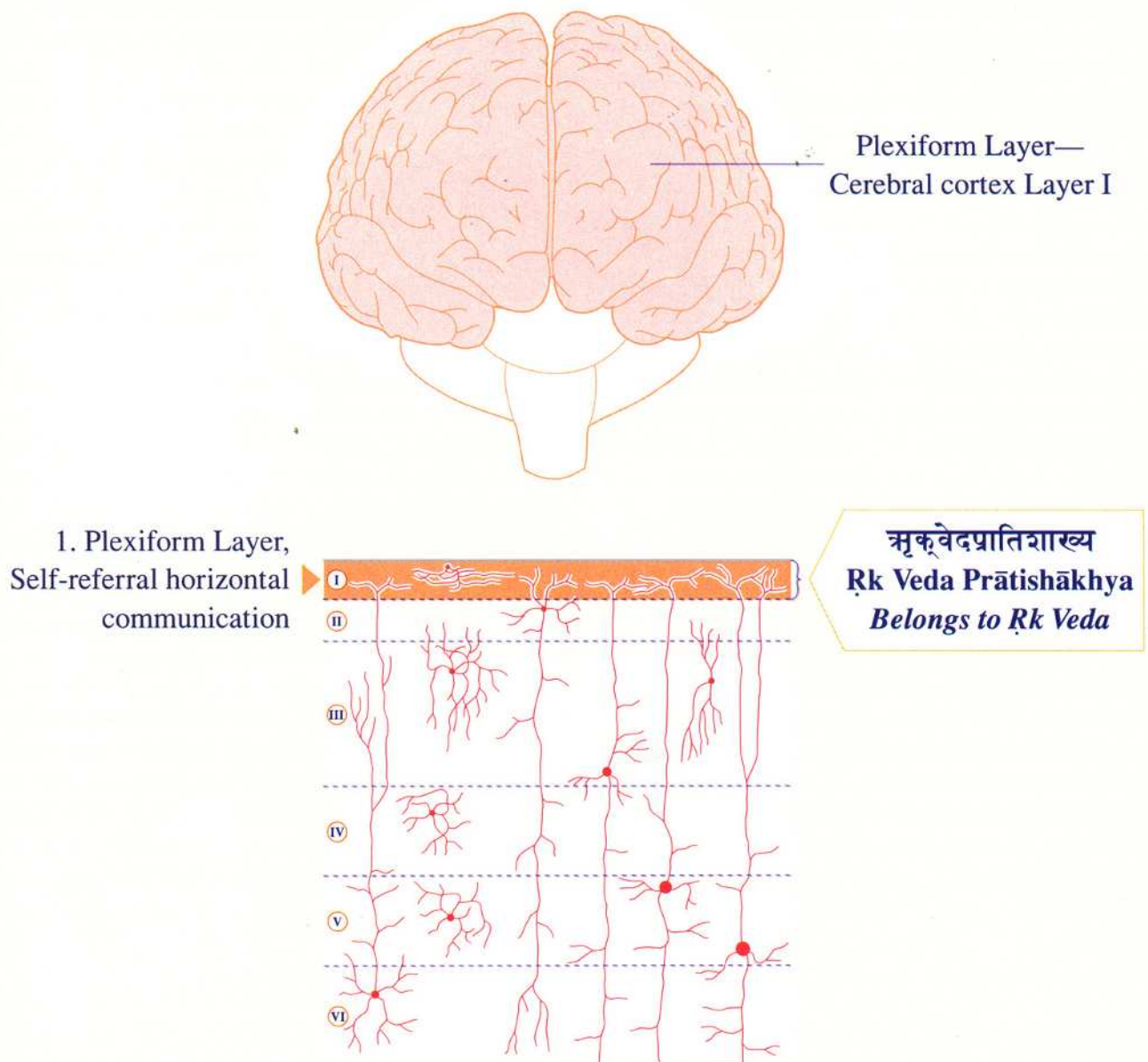


Figure 84: The upper part of this illustration shows the cerebral cortex, on the surface of which is Layer I—the plexiform layer—which corresponds to Ṛk Veda Prātishākhya. The lower part of this illustration highlights Layer I as the uppermost layer of the six layers of the cortex.

32. SHUKLA-YAJUR-VEDA PRĀTISHĀKHYA: Corticocortical Fibres, Cerebral Cortex Layer II

Shukla-Yajur-Veda Prātishākhya represents the **silencing** value of consciousness. Yajur-Veda represents wholeness with reference to Devatā value. As mentioned earlier, Devatā is the link between Rishi and Chhandas—between the knower and the known. It corresponds in the physiology to the processing systems. The higher order cognitive level of this interconnecting and processing aspect of physiological activity resides in the cerebral cortex in Layers II and III. Neurons in Layer II of the cerebral cortex send their axons to other cortical layers interconnecting them. They have the ability to **silence** noise and unwanted information. Layer II corresponds to Shukla-Yajur-Veda Prātishākhya.

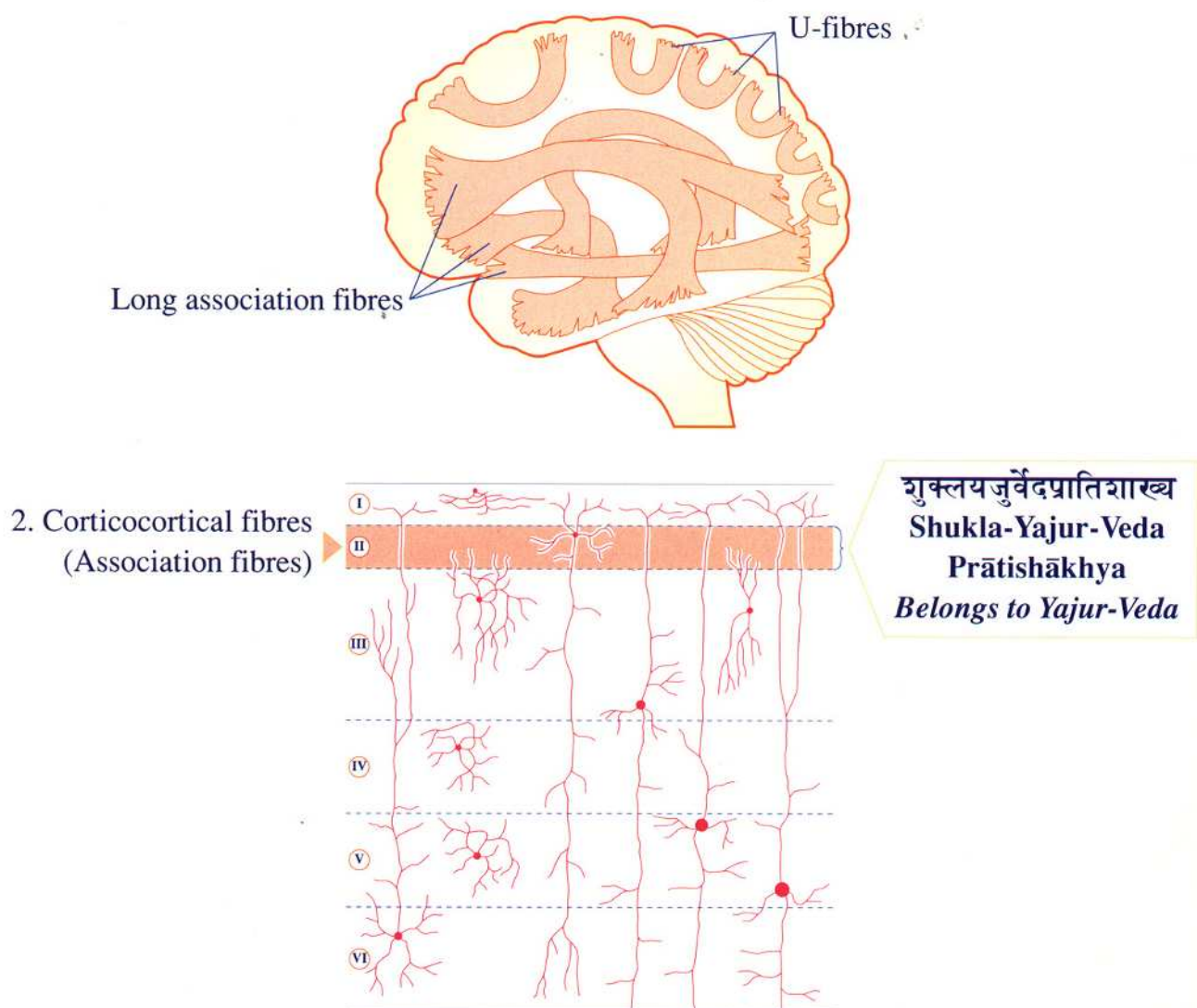


Figure 85: The upper part of this illustration shows the corticocortical fibres (U-fibres and long association fibres). They originate in the cerebral cortex, which is highlighted as Layer II in the lower part of this illustration. Layer II corresponds to Shukla-Yajur-Veda Prātishākhya.

33. KRISHNA-YAJUR-VEDA PRĀTISHĀKHYA: Commisural and Corticocortical Fibres, Cerebral Cortex Layer III

Kṛishṇa-Yajur-Veda Prātishākhya represents the **omnipresent** value of consciousness. Layer III of the cerebral cortex contains cells whose projections are spread via the commisural and corticocortical fibres to all areas of the cortex. The commisural fibres cross from one side of the brain to the other connecting distant cortical layers. They, therefore, are a wide-range integrating and processing set of fibres within the self-referral nature of the activity of the nervous system. They have a quality of **omnipresence**. Layer III therefore corresponds to Kṛishṇa-Yajur-Veda Prātishākhya.

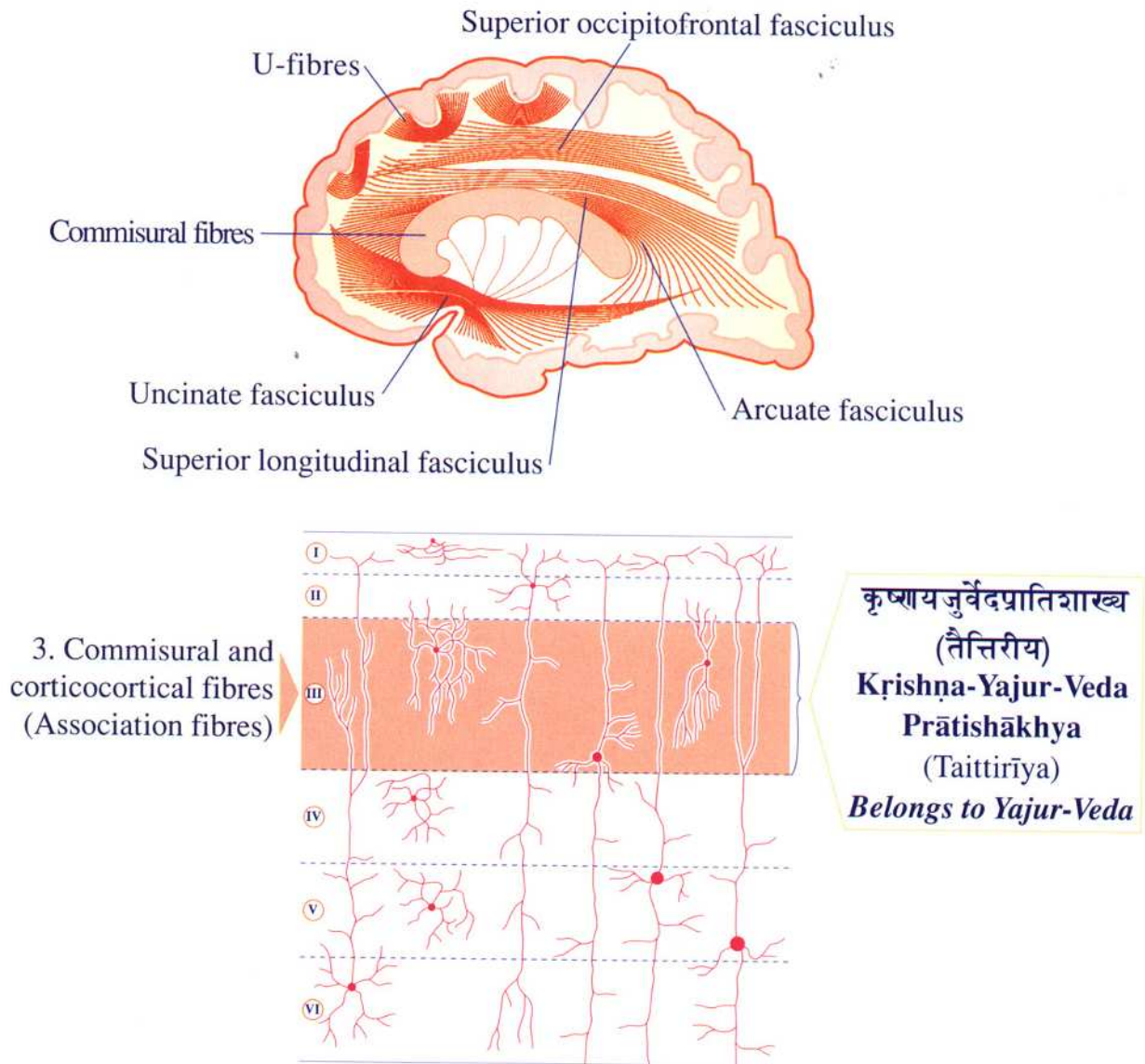


Figure 86: The upper part of this illustration shows the commisural fibres of the corpus callosum and various corticocortical fibres. They originate in the cerebral cortex Layer III highlighted in the lower part of this illustration. Layer III corresponds to Kṛishṇa-Yajur-Veda Prātishākhya.

34. SĀMA VEDA PRĀTISHĀKHYA (Pushpa-Sūtram): Thalamocortical Fibres, Cerebral Cortex Layer IV

Sāma Veda Prātishākhya corresponds to the **unmanifesting** value of consciousness. As was discussed in Section 1 of this chapter, Sāma Veda represents wholeness with reference to the Ṛishi value. It corresponds in the physiology to the sensory systems. The integration of sensory input into higher order perception, allowing wholeness to emerge while unmanifesting the specific aspects of sensory experience, happens in the cerebral cortex. The layer of the cerebral cortex which receives specific afferent (incoming) sensory inputs is Layer IV. This layer corresponds to Sāma Veda Prātishākhya.

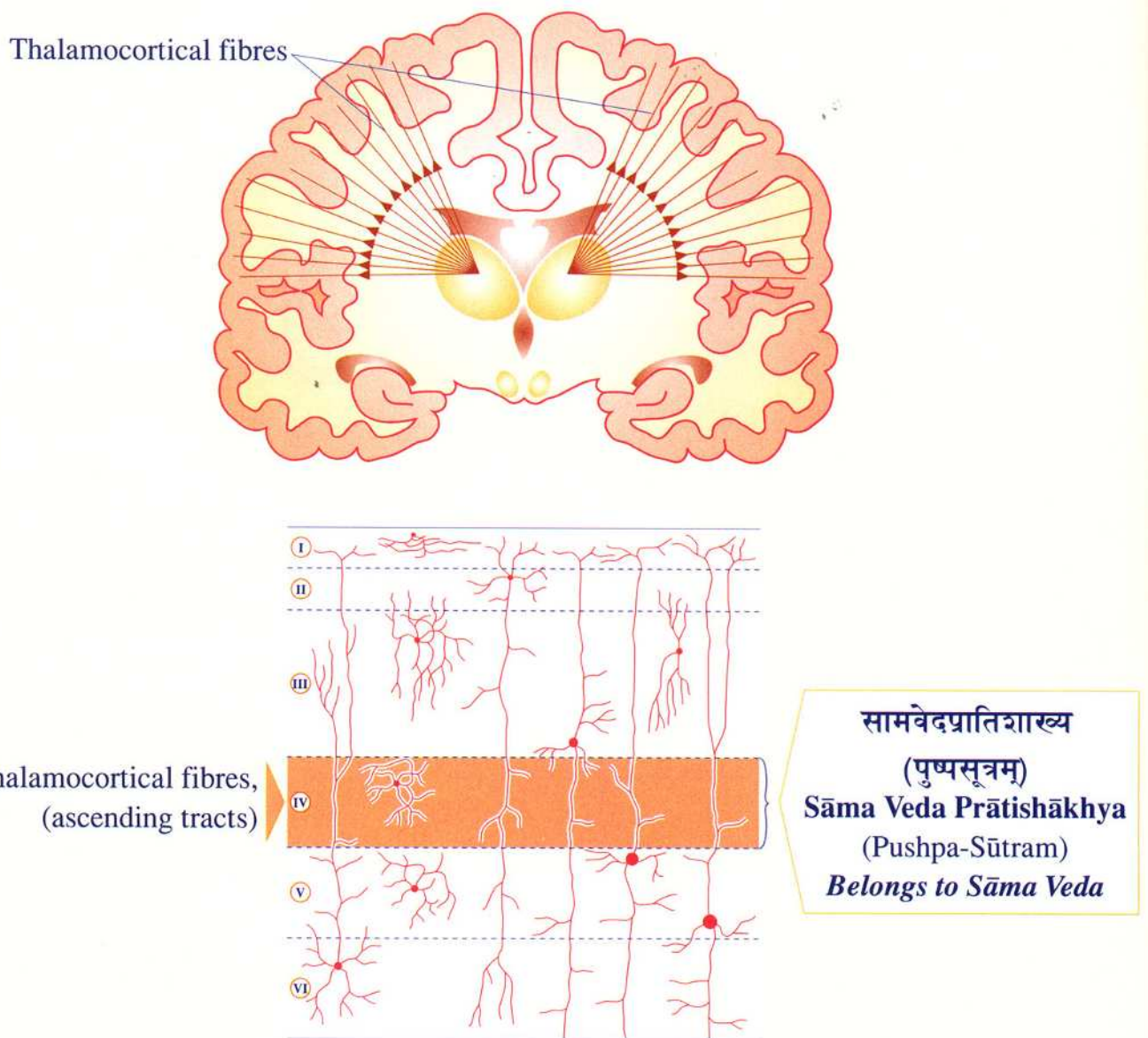


Figure 87: The upper part of this illustration shows the thalamocortical fibres. They originate in the thalamus and project to Layer IV of the cerebral cortex. Layer IV is highlighted in the lower part of this illustration. Layer IV corresponds to Sāma Veda Prātishākhya.

35. ATHARVA VEDA PRĀTISHĀKHYA: Corticostriate, Corticotectal, and Corticospinal Fibres, Cerebral Cortex Layer V

Atharva Veda Prātishākyā represents the **unfolding** quality of consciousness. Atharva Veda represents wholeness with reference to Chhandas value. It corresponds in the physiology to the motor systems. The highest order planing and initiation of motor activity reside in the cerebral cortex. Layer V of the cerebral cortex contains the neuronal cells called pyramidal cells which send their axons outside the cortex and brain to **unfold** motor activity. Layer V corresponds to Atharva Veda Prātishākyā.

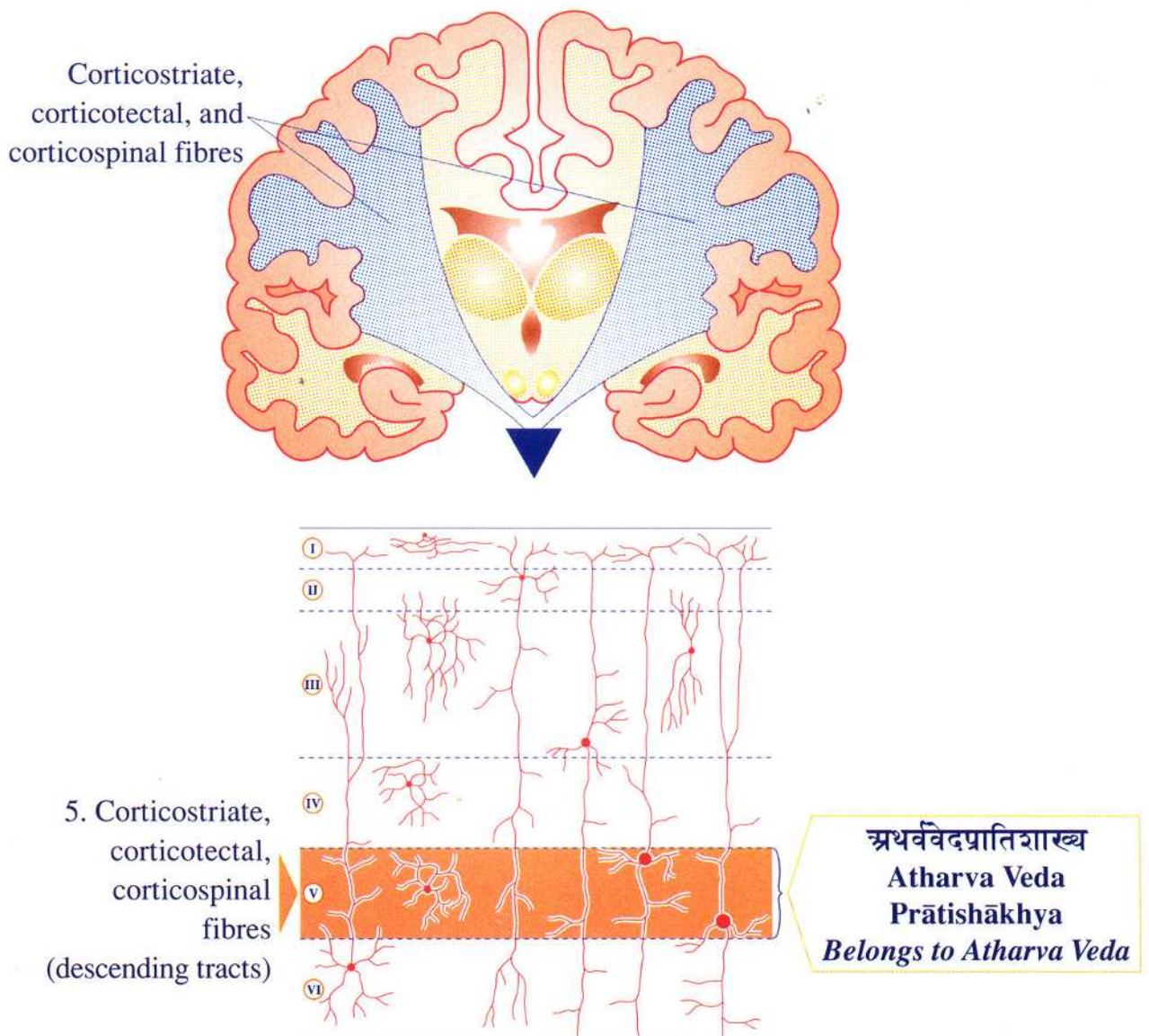


Figure 88: The upper part of this illustration shows the corticostriate, corticotectal, and corticospinal fibres. They originate in the Layer V of the cerebral cortex highlighted in the lower part of the illustration. Layer V corresponds to Atharva Veda Prātishākhya.

36. ATHARVA VEDA PRĀTISHĀKHYA (Chaturadhyāyī): Corticothalamic and Corticoclaustral Fibres, Cerebral Cortex Layer VI

Atharva Veda Prātishākhya (Chaturadhyāyī) Prātishākhya represents the **dissolving** value of consciousness. Layer VI of the cerebral cortex contains pyramidal cells. They send axons to the thalamus and keep its input in balance by **dissolving** unwanted inputs. Layer VI of the cerebral cortex corresponds to Atharva Veda Prātishākhya (Chaturadhyāyī).

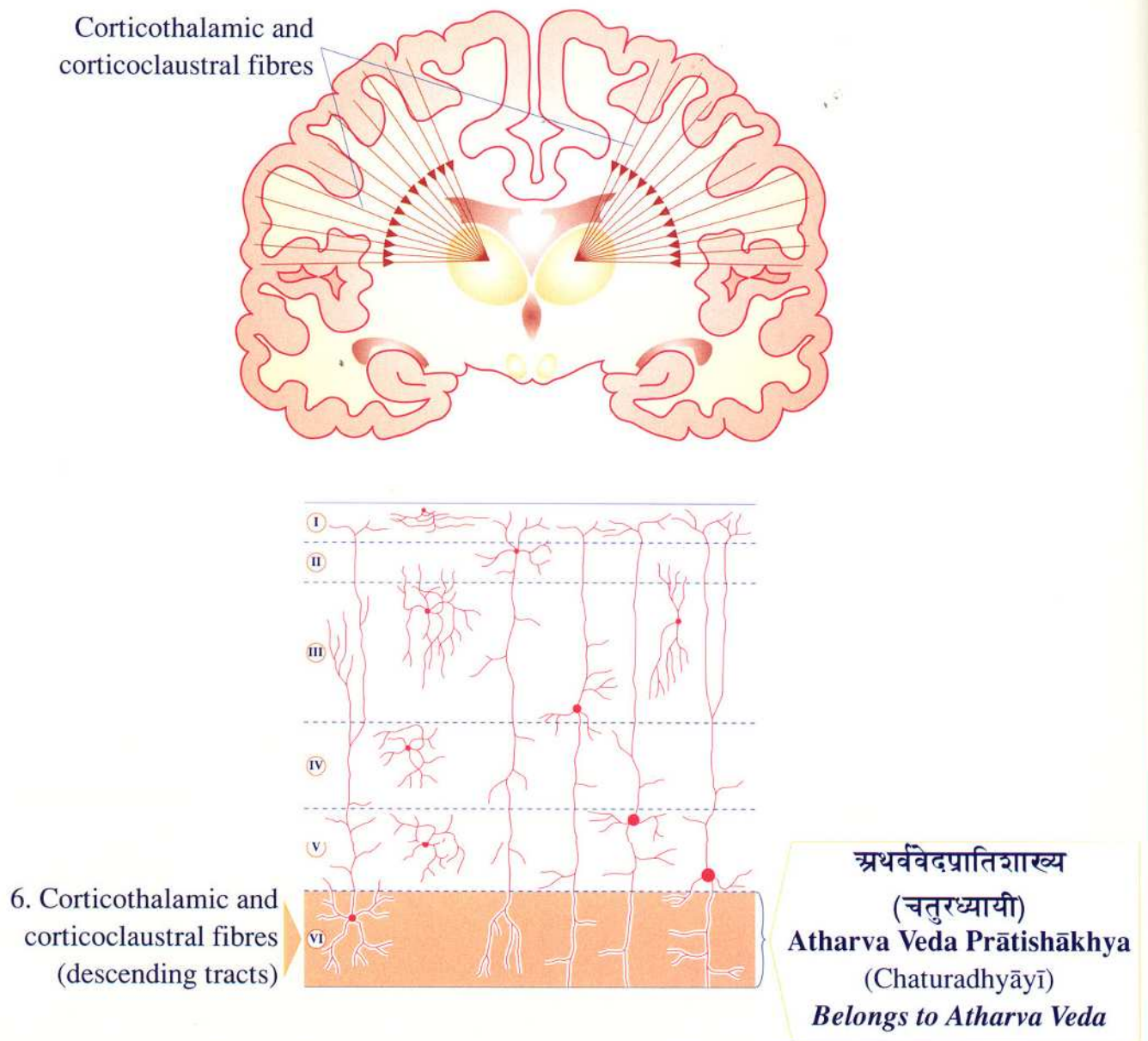


Figure 89: The upper part of this illustration shows the corticothalamic and corticoclaustral fibres. They originate in the Layer VI of the cerebral cortex highlighted in the lower part of the illustration. Layer VI corresponds to Atharva Veda Prātishākhya (Chaturadhyāyī).

*500 Scientific
Research Studies*

More than 500 scientific research studies conducted in more than 200 institutions around the world have shown the profound benefits of Maharishi's Vedic Technology, the Transcendental Meditation and TM-Sidhi Programme, for the creation of perfection in every area of individual and social life. It is interesting to note one recent finding of scientific research* conducted at the Brain Research Institute of the Russian Academy of Science by Professor Dr Nicolai N. Lyubimov. Professor Lyubimov has demonstrated that people practising the technology of Maharishi's Vedic Science, the Transcendental Meditation and TM-Sidhi Programme, express that full quality of Prātishākhya.

* In several experiments, using computerized electroencephalography, control subjects responded to sensory stimuli by activating (as expected) small localized areas of the brain that correspond to the particular stimulus. When subjects practising Maharishi's Transcendental Meditation and TM-Sidhi Programme were tested under the same conditions, they responded by enlivening the whole brain. Changes in electrical potential were detected over a wide area of the skull bilaterally, in contrast with the small unilateral, localized changes observed in control subjects. These results indicate the growth of a more holistic, integrated activity of the nervous system. Professor Lyubimov suggests that Maharishi's Transcendental Meditation and TM-Sidhi Programme enlivens the whole brain and opens up the unused reserves of the brain. This is an indication of the enlivenment of the full value of Prātishākhya.

CHAPTER VI

The Fabrics of Immortality

The Vedic Literature declares that bliss is the essence of life and that the whole creation flows and evolves from within bliss:

आनन्दाद्ध्येव खल्विमानि भूतानि जायन्ते ।

आनन्देन जातानि जीवन्ति ।

आनन्दं प्रयन्त्यभिसंविशन्ति ॥

Ānandād dhyeva khalvimāni bhūtāni jāyante,

ānanden jātāni jīvanti,

ānandaṁ prayantya abhisamvishanti.

(Taittirīya Upanishad, 3.6.1)

From Bliss, indeed, all these beings originate; by Bliss they are sustained; towards Bliss they move; into it they merge.

*What is the
Range of Human
Potential?*

Throughout the ages, questions have been raised about the real essence of human nature. What is the range of human potential? What can human society achieve? Are disease, suffering, struggle, and strain part of the human lot, or does humanity have the ability to live in perfect health, to enjoy fullness of life in wisdom and bliss consciousness?

In the early 1970's, His Holiness Maharishi Mahesh Yogi declared that, 'through the window of science, we see the Dawn of the Age of Enlightenment'. He proclaimed that struggle and strain, suffering and disease, are not necessary; that humanity is born to enjoy health and happiness, and that bliss is the birthright of everyone.

*Maharishi's
Vedic Science
and Technology*

Maharishi's statements were based on his complete knowledge and experience of Veda and the Vedic Literature, and on the ability of modern scientific research to validate the holistic, positive effects of Maharishi's Vedic Science and Technology*.

In his teachings, lectures, and presentations around the world during the past 38 years, Maharishi explained that the human physiology is the material expression of Natural Law, built and modelled on the basis of the same laws of Nature that structure the whole universe and which are expressed in verbal form in Veda and the Vedic Literature. He emphasized that the human physiology *is* Veda, and that, therefore, it has the total potential of Natural Law available to it.

* More than 500 scientific research studies conducted in more than 200 institutions around the world have shown the profound benefits of Maharishi's Vedic Technology, the Transcendental Meditation and TM-Sidhi Programme, for increasing perfection in every area of individual and social life (see Appendix IV).

Maharishi has brought together all the scattered aspects of Veda and the Vedic Literature. He discovered the uncreated, immortal nature of Veda, and how, in its self-sufficiency it comments on itself. He brought to light the full understanding of Veda as being sound (Mantra) and silence between sounds (Brāhmaṇa); and how in the gaps between the sounds, the mechanics of transformation, the secrets of creation and evolution, are located. Maharishi has given the technology of how to take full advantage of the total knowledge of life and creation available in Veda and the Vedic Literature. He has discovered and proclaimed that human life can be lived in higher states of consciousness, in perfection and bliss, and society can be crime-free, with 'all good everywhere and 'non-good' nowhere—Heaven on Earth.' (See Appendix III.)

<i>Veda</i>	The term Veda means knowledge, or total knowledge—knowledge of all the laws of Nature, their structuring dynamics, and the mechanics of transformation which uphold the infinite diversity of the universe in perfect order and maintain evolution. Veda is totality, wholeness—all silence and all
<i>Knowledge</i>	dynamism—complete infinite knowledge. Knowledge is like the light that dispels the darkness of ignorance, and allows speech and action to be appropriate to place, time, and circumstances. Total knowledge of Natural Law produces speech and action according to Natural Law. Knowledge, therefore, has organizing power. Complete knowledge, infinite knowledge, has infinite organizing power.
<i>Blossoming of Knowledge</i>	Knowledge blossoms when the knower, the process of knowing, and the known come together. Therefore knowledge is the togetherness of the three values expressed also in terms of observer (Rishi), process of observation (Devatā), and observed (Chhandas).

When we examine where infinite knowledge could be available, we find that it must be where all observers, all processes of observation, and all possible objects of observation come together, in one awareness. This is the field of pure consciousness—pure awareness—the unified field of all the laws of Nature. This is the field of pure knowledge—total knowledge.

Maharishi explains that this is Veda. It is self-referral, pure consciousness. Veda is structured in consciousness. Consciousness is the field of intelligence that is a unified state of knower, knowing, and known.

<i>The Structure of Pure Knowledge, or Veda</i>	When seen, so to say, from a distance, this field of Veda—pure self-referral consciousness—can be described as a silent, unmanifest, transcendental reality. Yet, all possible manifestations and all the laws that structure the whole universe reside within it. This is expressed in Veda by the following verse:
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ऋचो अक्षरे परमे व्योमन् यस्मिन्देवा अधि विश्वे निषेदुः ।
यस्तन्न वेद किमृचा कश्चिद्यति य इत्तद्विदुस्त इमे समासते ॥

*Richo akshare paramē vyoman yasmin devā adhi vishve nisheduh,
yastanna veda kim ṛichā karishyatiya it tad vidus ta ime samāsate.*

(Rk Veda, 1.164.39)

The verses of Veda exist in the collapse of fullness in the transcendental field, in which reside all the impulses of creative intelligence, the laws of Nature, responsible for the whole manifest universe.

He whose awareness is not open to this field, what can the verses accomplish for him? Those who know this level of reality are established in evenness, in wholeness of life.

*Experiencing
Veda*

With Maharishi's Vedic Technology, the Transcendental Meditation and TM-Sidhi Programme, one fathoms that field, and one becomes able to experience the fluctuations within its state of singularity. These fluctuations, or laws of Nature, have a structure. That structure is the structure of Rk Veda. The structure of Rk Veda has been shown to be the same as that of the human physiology, as described in this book.

*What Gives
Veda a
Structure*

The structuring dynamics of Veda are elaborated in the Vedic Literature through the 36 different categories described in the fifth chapter. The structuring dynamics of Veda means the underlying mechanics that give a structure to knowledge. Since knowledge is the togetherness (Samhitā) of knower (Rishi), knowing (Devatā), and known (Chhandas), these 36 kinds of structuring dynamics are classified into Samhitā, Rishi, Devatā, and Chhandas.

These values are the fundamentals of the whole universe—the structuring dynamics of the whole universe conducted by Natural Law.

*Rk
Veda*

The total collectedness of all the laws of Nature in their unified state—Samhitā value—is holistically available in the structure of Rk Veda. The last six branches of the Vedic Literature, the six Prātishākyas, stand as the Samhitā value of the structuring dynamics of Veda. The entire performance of diversified laws is available in the remaining 30 branches, which are divided into three categories pertaining to Rishi, Devatā, and Chhandas.

*The Vedic
Literature*

Furthermore, each of the 36 branches of the Vedic Literature expressing the structuring dynamics of Rk Veda, has a special quality such as expression (Shikshā), transformation (Kalpa), expansion (Vyākaraṇa), unifying principle (Yoga), or the ability to distinguish and decide (Nyāya).

*38 Years of
Discoveries in
Consciousness*

It is very fortunate that the past 38 years have seen the greatest discoveries in the field of total knowledge and its structuring dynamics by Maharishi. Maharishi's Vedic Technology has

allowed millions of individuals in the world to experience total Veda in their awareness, and enliven it in world consciousness. This awakening of Veda in world consciousness contributed to the unfoldment of the full structure and function of Veda and the Vedic Literature by Maharishi. It is also fortunate that more than 150 years of scientific research have uncovered the structure and function of the physiology; this laid the foundation for the discovery that the human physiology is Veda.

*The Human
Physiology
Is Veda*

The discovery that the human physiology is Veda tells us that the human physiology contains within it the total, infinite organizing power of Nature. The field of all possibilities is open to human understanding and direct experience. The human physiology is itself the field of all possibilities—Veda expressed in material form. This explains why the highest level of human dignity and complete mastery over Natural Law can be made available to everyone—totality in one single awareness. This discovery also explains why we look as we do; why different organs and organ systems perform their specific functions. There is order in creation; the eye will see, the ears will hear, no matter what species—human race, elephant, monkey, or other species. There is order because there is pure knowledge. The structure of knowledge—Veda—is at the basis of all life, and it is this order that works out all the steps of evolution. Veda expresses itself as human physiology.

The ancient texts of wisdom and holy scriptures from all traditions expressed this reality of life in various ways:

In the Vedic Literature:

अहं ब्रह्मास्मि

Aham Brahmāsmi—Bṛihad-Āraṇyaka Upanishad, 1.4.10

'I am totality'

In the Tao:

'The nature of Heaven belongs to man'—Yin Fu Ching 1:3-4

In the Bible:

'God created man in His own image'—Genesis 1:27

In the New Testament:

'The Kingdom of Heaven is within you'—Luke 17:21

In the Qur'an:

*'And on earth are signs of God for those of assured faith,
They are within you, do you not perceive?'—Zariāt 51, 20*

and in a poem by Imām Ali, the last 'wise Khalif' of Islam:

*'And consider yourself to be a small atom,
yet the whole universe is folded within you'*

Natural Law

In light of this reality, it is understandable why damaging the human physiology, or inflicting pain and suffering to any creature, is a crime. Any violation of Natural Law, or damage to any of its expressions, is a crime. The greatest crime is that of killing someone because it is an attempt to destroy Veda, the very fabric of life.

As Natural Law is invincible, immortal, and self-sustaining, and its power is indomitable, any disturbance to its expressions in any form leads to an equal and opposite reaction. When the disturbance is damaging, the result is pain and suffering. When action is life-supporting, the result is the experience of happiness.

Action in Accord with Natural Law

Action performed in accord with Natural Law, and total bliss consciousness experienced without interruption, is always available when thought and action are projected from the state of pure consciousness. In that state, the physiology spontaneously aligns itself with its own essential nature, its pure state of perfect structure and function—Veda. Since Veda is total knowledge, in that state no mistakes can be made. No suffering, no pain, and no disease can be experienced; life flows in the fullness of bliss consciousness.

However, when one is out of the Transcendent, the possibility of making mistakes always exists. To make the transcendent a living reality, and avoid stepping out of the field of infinite knowledge and its organizing power, the human physiology has to gain the perfect, flawless structure of Veda, and make Veda an all-time reality.

Maharishi's Transcendental Meditation and TM-Sidhi Programme

Through Maharishi's Transcendental Meditation and TM-Sidhi Programme, it is possible to experience transcendental pure consciousness—the unbounded Self, Ātmā. Awareness of the Transcendent, Atyantābhāva—Ātmā—is open to all. The mind transcends, and that is all that is required. Since each state of consciousness (e.g., sleep, dream, waking, transcendental consciousness), has its own corresponding state of physiology, the physiology during transcending is functioning in that mode which can sustain Ātmā Chetanā (pure consciousness).

However, after transcending, the physiology reverts back to waking state. It does not remain the physiology of the transcendent; it comes back to the physiology of Jīva, or individual awareness. So it moves from Ātmā Chetanā to Jīva Chetanā, back and forth. Jīva will remain in an individual localized awareness until Ātmā Chetanā equates with cosmic Chetanā—total universe in one wholeness.

For this, a permanent physiological transformation has to take place. Through repeated exposure to Ātmā Chetanā, in time, the value of totality—Veda and all the structuring dynamics of Veda—become established in the physiology as a lively all-time reality. Jīva Chetanā rises up to Brāhmī Chetanā—unbounded, all-inclusive totality of point and infinity.

The value of time in developing higher states of consciousness is expressed by the

following verse from the Bhagavad-Gītā:

न हि ज्ञानेन सदृशं पवित्रमिह विद्यते ।
तत्स्वयं योगसंसिद्धः कालेनात्मनि विन्दति ॥

*Na hi gyānena sadṛisham pavitram iha vidyate,
tat swayam yog-sam-siddhaḥ kālena ātmani vindati.*

(Bhagavad-Gītā, 4.38)

Truly there is in this world nothing so purifying as pure knowledge; he who is perfected in Yoga, of himself in time finds this within himself.

*Value of Reading
Veda and the
Vedic Literature*

This process, which unfolds in time, can be enhanced and accelerated through reading or listening to Veda and the Vedic Literature.

A story in the Upanishadas and Purāṇas, illustrates the value of the sounds of the Veda and Vedic Literature, as brought to light in Maharishi's Vedic Science and Technology:

A Rishi called Vishwāmitra wanted to be addressed as Brahmarshi—or Rishi in Brāhmī Chetanā. Vasishtha, a Brahmarshi himself, would not address him as such, but at every one of their encounters he would speak to him in such a way that he would project onto Vishwāmitra whichever value he was deficient in. If the unifying character was lacking, a Yoga value would be projected; if the expanding nature was missing, a Vyākaraṇa or Nirukta value would be impressed upon Vishwāmitra by Vasishtha. Sometime Nyāya, sometime Sāṃkhya, etc.

Thanks to that projection, Vishwāmitra's physiology was further transformed in the direction of a Brahma physiology, leading to the transformation of a Rishi into a Brahmarshi.

Maharishi explains that this story is an example of how the physiology can be transformed through the specific sounds of Veda and the Vedic Literature.

The sounds of the syllables, verses, and hymns (Mantras) of Veda and the Vedic Literature are the frequencies whose vibrations enliven specific aspects of the physiology.

As described in this book, the structure of the various branches of Veda and the Vedic Literature correspond to specific structures in the physiology. These anatomical structures therefore have the same intelligence at their basis as that Intelligence which structures the Vedic sounds to which they correspond.

*The Vedic
Sounds
Resonate with
the Physiology*

It is thus reasonable to conclude, as Maharishi explains, that the recitations of the sounds of the Vedic Literature in their proper sequence will resonate with the same anatomic structures to which they correspond. Their specific sequence will also enliven a specific sequence of neuronal, physiological activity. This will induce the physiology to function according to its original and perfect design. Any imperfections in the form of blocks, stress, lack or excess of activity, or abnormal connections between the various components of the physiology, will be disfavoured by reading the specific aspect of Veda and the Vedic Literature that corresponds to that area of the physiology which is dysfunctional.

This clearing up and balancing applies to any kind of abnormality, structural or functional. Only the processes that are according to the original perfect design will be enhanced; all aberrations will be cleared out. It is like the rush of a powerful, pure stream which clears any mud or deposit blocking the free flow of a river.

*The Vedic
Literature
for
Perfection*

The value of reading the Vedic Literature is thus seen to be the most subtle, profound, and holistic therapeutic approach, and the most complete system of rehabilitation. Anyone not living perfection in life can attain the high dignity of life for which his physiology was originally constructed by practising Maharishi's Transcendental Meditation and TM-Sidhi Programme and read the Vedic Literature.

*Structuring
Fullness
of Life*

Every young boy or girl should learn to read the Vedic Literature as early in childhood as practical. This will ensure the proper nourishment and sustenance of their physiology and their evolutionary growth, under the appropriate guiding, structuring, and culturing impulses. A young person who reads Veda and the Vedic Literature at least two to three times will grow up to be a lively expression of perfection, enlightenment, and fullness of life.

It is known scientifically that neuronal connections, particularly at the early stages of life, are highly influenced by the nature of the stimuli to which the individual is exposed. Depending on the nature of the stimuli, certain connections get established in the brain early in life and become part of what makes up his individuality. If these connections are anomalous, and as long as they remain like that, life will not be lived in its fullness*.

*Proper
Training*

Any kind of sensory or emotional experience leaves a trace in the physiology. Upon repeated exposure to the same stimulus (experience), the neuronal transformation produced by that stimulus becomes more permanent. On the other hand, any lack of required stimuli will prevent the necessary connections from taking place, and the full development of related functions will be

* It is interesting to note in this regard that living full Veda does not mean losing one's individual characteristics. Self-referral quality is gained, but in the same way as there are various structuring dynamics in the 36 branches of the Vedic Literature, everyone will have his individuality with the predominance of certain characteristics.

hampered. Proper and timely sequence of exposure to the most appropriate stimuli is a security for the proper development of a physiology capable of achieving its full potential—mastery over Natural Law, life in perfection. This development is available to everyone in the sounds of Veda and the Vedic Literature. Through proper training, it is completely within our reach to spontaneously speak and act according to Natural Law, i.e., to not make mistakes. We have the potential to always act in an evolutionary direction, in the orderly evolution of the structure of R̥k Veda and the 36 areas of the Vedic Literature, because the same orderly structure is available to us in our own anatomy and physiology.

*The Structuring
Dynamics of
Natural Law*

To understand the dynamics of how action according to Natural Law unfolds, and how all change, growth, and evolution occur, we have to understand the mechanics of transformation of any state, situation, or condition into any other state, situation, or condition. This is available to us in the study of the dynamics of the gaps between the sounds of Veda (gaps between syllables, verses, etc.); and the exact similarity and confirmation of the same dynamics available in the study of the mechanics of the gaps between the various cells of the physiology, including the gaps between neurons (as discussed in chapters II, III, IV, and V).

To describe their dynamics briefly, one expression (syllable or presynaptic impulse) collapses into the gap and another expression (a new syllable or postsynaptic impulse) emerges. If the gap junction is perfectly balanced, the emerging expression is perfectly in tune with the expected sequence of expressions. The new syllable or impulse will undergo the same process of collapse, and a third expression will emerge. In this way, one state collapses, and a new state arises. In neurophysiological terms, a presynaptic impulse collapses at the gap junction (it enters the totally silent phase of the gap). A new postsynaptic impulse emerges. The emerging impulse depends on the quality of the presynaptic impulse, and on the inner dynamics of the gap.

*Order in
Creation*

The dynamics that ensure the proper sequential flow of one state to another (or one situation to another) depend therefore on the integrity of the mechanisms of transformation within the gap: What is collapsing into the gap? How is the collapse (Pradhvaṁsābhāva) taking place? Is the gap perfectly balanced and in its simplest state? Or is it a 'noisy,' excited gap junction?

On these factors will depend the purity of the next stage, or step, of progression. The intended result (Prāgabhāva) can be perfect only when there is no interference inside the gap junction, when the state of pure silence (Atyantābhāva) is available.

Any anomaly* leads to an unwanted outcome associated with an unpleasant experi-

* Anomalies are due to mistaken intellect, which sees diversity and forgets the self-referral unity, wholeness. This means Atyantābhāva is not available to it and the mechanics of transformation are disturbed leading to an apparent divergence. This divergence can be experienced as pain or suffering. The only security for perfection is the liveliness

Continued on next page...

ence (pain or suffering), indicating an apparent mistake in the 'sequence'! Whenever there is any anomaly mechanisms are activated to correct it. The self-correcting mechanisms available within the structuring dynamics of Natural Law, the structuring dynamics of Veda, always put everything back on the highway of evolution so that the laws of Nature continue to delight in the undisturbed flow of their expressions; or in other words, Veda continues to rejoice in the perfect, flawless sequence of its sounds, syllables, and verses⁺.

*The Path
of
Evolution*

This happens in the state of balance of the gap; the collapsing impulse, even though going to a state of no expression (nothingness, Atyantābhāva), imparts its quality onto the gap. The gap is therefore the silent witness, which sees the previous impulse and the following impulse. It holds in silence the memory of both. The nature of the gap which holds the memory of both, the previous and the following impulses, is called Anyonyābhāva. This is what maintains order in creation on the field of the unmanifest Atyantābhāva. This is the secret of all transformations on the path of evolution.

All human behaviour, speech, and action follow this flawless system of collapse and emergence. What emerges depends on what collapsed, and on the purity and balance of the silent, self-referral gap between consecutive thoughts, decisions, words, actions, etc.

This is the display of the indomitable power of Natural Law, which maintains order in the whole universe. Nothing is ever wasted, nothing is ever lost. Through the perfect mechanics of transformation, everything unfolds with great precision.

*Mastery
Over
Natural Law*

Mastery over Natural Law is always available where its source and goal lie, in the silence of the gap, in Atyantābhāva—self-referral pure consciousness. Capturing that level of life in one's consciousness gives total freedom, invincibility, all possibilities, immortality. Acting from this level means acting while established in silence. This is expressed in the

Footnote continues from previous page ...

of the self-referral, pure consciousness available in the silent dynamism of Atyantābhāva and the maintenance of the proper sequence of the steps of evolution. This is made possible through Maharishi's Transcendental Meditation and TM-Sidhi Programme and the enlivenment of the proper neuronal activity by reading Veda and the Vedic Literature.

Other approaches aiming at alleviating an anomaly might include the introduction of a specific impulse of intelligence (in the form of medicine, caring and loving speech, sound, music, etc.) which will find its way through the gap and stimulate the missing Prāgabhāva in an attempt to restart the proper flow in the designed sequence. This can, however, be partial and could be harmful when the introduced impulse generates an unwanted response at sites and times that are not intended in the therapeutic strategy. (This is what is commonly known as harmful side-effects.)

+ Veda and the Vedic Literature are the sounds of Natural Law murmuring to itself. Natural Law created its own system of maintaining itself on the verbal level through Veda and Vedic Literature. For thousands of years, generation after generation, the Veda and Vedic Literature has been maintained in the tradition of Vedic families of India. Even though scattered and often misinterpreted, they kept themselves reverberating. Their value, as explained by Maharishi, resides in the mechanics of transformation available in their gaps and in their sounds. Translating Veda and the Vedic Literature and attempting at intellectually comprehending them is therefore an exercise with very limited scope and significance when compared to the holistic value of Veda, which is the total structuring of human life and society.

Bhagavad-Gītā:

योगस्थः कुरु कर्माणि ।

Yogasthah kuru karmāṇi

(*Bhagavad-Gītā*, 2.48)

Established in Yoga, perform action.

Action in
Non-Action:
Real Freedom

Acting while established in silence, in Yoga, is the meaning of action in non-action, which gives real freedom from any boundaries imposed by partial, non self-referral impulses, and from desires that cannot find their fulfilment, and which collapse and emerge out of tune with the cosmic symphony, leading to stress in the fabrics of creation.

It is interesting to note that, in reality, Atyantābhāva is always available. It always masters perfectly the mechanics which ensure, through Anyonyābhāva, that the most appropriate Prāgabdhāva emerges from the incoming Pradvāṁsābhāva. The secret is in the ability to sit where Atyantābhāva (self-referral consciousness) is, and become the master of all transformations, thus guiding the destiny of any Pradvāṁsābhāva to any Prāgabdhāva one wants. This is the supreme secret of creation, the secret of the creator. No struggle, no strain, no suffering, and no pain are necessary.

Fulfilment
of all
Desires

Acting while established in the self-referral, silent Atyantābhāva—pure consciousness—is the secret for the fulfilment of all desires. One can achieve anything, be anything, create lotuses out of mud, move mountains, and shake the cosmic structure.

The Basis
of
Immortality

It is also in these same silent mechanics of transformation that the understanding of immortality lies. The whole dynamics of change and evolution happen through the mechanics of transformation—transformation rather than disappearance, rather than destruction or death. We do not say that the presynaptic impulse was destroyed; it simply transformed itself into the postsynaptic impulse. The syllable does not get annihilated, it just became the next syllable.

No impulse of the infinitely self-referral absolute level of life dies, whether a thought, a particle, an elephant, a human being, or a galaxy. It gets transformed. When we speak of something vanishing, what is really meant is that it became something else. The first law of thermodynamics also points to the same reality: *Nothing is lost, everything is transformed*. This transformation from one state to another occurs by means of the silent, unbounded pure level of existence, which is immortal in its self-referral nature. We have called it sometimes Atyantābhāva, sometimes gap, at other times the Transcendent, or pure consciousness.

Living
Immortality
in Change

No matter what its name, every one of its fluctuations is always with reference to itself. It is the real Self of everything. Every impulse of knowledge, every impulse of Natural Law, or creative

intelligence, every impulse of Veda, finds its course of creation, collapse, and re-emergence. Therefore, the ever-changing field of the relative is itself immortal, but immortal on the basis of the continuous creation and re-creation of everything. Change therefore thrives in immortality. Here we see two values of immortality. One is on its own level of self-referral, pure silence, which is fully awake within itself, and the other is a field of dynamism in which everything enjoys being new again, different again, ever-changing, ever-experiencing the unbounded field of all possibilities, to which every impulse collapses and from which it emerges, and to which it goes again. It continues to merge and emerge again and again, immortal yet changing, delighting in its play and re-creation.

The relative field of life therefore enjoys these two levels of immortality. Ever diving into the one immortal, absolute, and ever maintaining itself in the endless novelty of transformation and change.

*The Glory
of the Cosmic
Administrator*

When awake to this reality, the individual experiences the never ending bliss of creation, its play, and its ever serene, peaceful, fully awake, unbounded, limitless Self—the Self of everything and everyone. Having gone through the enlivenment of Veda and the Vedic Literature in one's physiology, one emerges as the totality of everything, the glory and joy of creation, liberated from the cycles of change, discovering immortality and the unlimited dignity of life, and rejoicing in the glory of the Cosmic Administrator, having found him to be one's own Self.

*Bliss—the
Birthright
of Everyone*

Now is the time in the history of development of science that the complete study of Natural Law is available to everyone through Maharishi's Vedic Science and Technology. The purpose of this discovery of Veda and the Vedic Literature in the physiology is served for every individual who uses the unlimited reservoir of energy and intelligence within himself. The knowledge is here, and the scientifically validated programmes to harness its benefits, for all possibilities in daily life, have been made available. Use them, and enjoy the bliss which is the birthright of everyone.

यतीनां ब्रह्मा भवति सारथिः ।

Yatīnām Brahmā bhavati sārathīḥ
(Ṛk Veda, 1.158.6)

*For those who are established in the singularity of
fully awake, self-referral consciousness,
Brahmā, the Creator—the infinite organizing power
of Natural Law—becomes the charioteer of all activity.*

CHAPTER VII

Benefits of Harnessing the Total Potential of Natural Law

*The Benefits of Harnessing the Total Potential
of Natural Law are Immeasurable and Infinite
in the Unbounded Space and Infinity of Time*

*Everything is possible when the infinite reservoir of energy
and intelligence is actualized on the level of human awareness*

Some of the main interests of human society are mentioned here. But these results are just the fringe benefits of applying the discovery of Veda and the Vedic Literature in the human physiology.

Health

Prevention-oriented health care system offering perfect health for the individual and handling the collective health of the nation for the creation of a disease-free society.

Education

Introducing study and research in consciousness into education—development of higher states of consciousness, mastery over Natural Law—the ability to know anything, do anything spontaneously right, and achieve anything.

‘Fruit of all knowledge’ to everyone—mistake-free, problem-free life.

Government

Supreme political science for automation in administration. Problem-free administration—conflict-free politics—national integration in every country—because Veda is lively as the inner administrator of everyone—it is the common basis of everyone’s life and the common administrating intelligence within the physiology of everyone. Now, total potential of the administrative intelligence can be enlivened within the physiology of everyone and everyone’s life can be trained to be in full accord with Natural Law.

Defence

Invincibility for every nation—victory before war—the ability to disallow the birth of an enemy anywhere.

Creating the Maharishi Effect—positivity and harmony in the national consciousness of every country so that every country radiates a nourishing influence to every other country and there are no border disputes anywhere in the world.

Rehabilitation

Ideal rehabilitation—the practicality of emptying prisons everywhere and restoring normal citizenship—restoring balance of the functioning in the physiology, psychology, sociology, and ecology.

Crime prevention by introducing the Transcendental Meditation and TM-Sidhi Programme in education.

Economy

Increased creativity leading to enhanced productivity, efficiency, profitability, and a pollution-free industry; reduced stress, reduced absenteeism, reduced health-care costs, and increased job satisfaction, as well as overall improved national and economic trends.

Religion

Fulfilment of every religion through the Will of God, which, from the platform of science, is called Natural Law.

Agriculture

Higher consciousness of the farmer, will maintain balance in Nature, a high level of productivity of the seed and the soil, and ideal weather condition.

Natural farming—promoting the healthy growth of the plant, healthy crops, and healthy food without the use of poisonous fertilizers.

Appendices

Appendix I

1. Scientific Research

Providing the Technology to Derive Maximum Benefit from the Discovery of Veda and the Vedic Literature in the Physiology

Scientific research verifies that the 37 qualities of consciousness displayed in the 37 areas of Veda and the Vedic Literature and their physical counterparts in the physiology are enlivened in all areas of human life, producing harmonious, healthy effects in the areas of physiology, psychology, sociology, and ecology through the Technologies of Maharishi's Vedic Science—Maharishi's Transcendental Meditation and TM-Sidhi Programme and Yogic Flying. This indicates the connectedness of Transcendental Consciousness with all levels of physiology, and provides the scientifically validated technology to take full advantage of the discovery of Veda and the Vedic Literature in human physiology for perfection in life through mastery over Natural Law.

The Constitution of the Universe—the collectedness of all the laws of Nature, the field of pure intelligence in Nature—is the source of all order and harmony displayed throughout the universe.

'The element of order—perfect order, absolute order—that characterizes the administration of the infinite diversity of the universe, is available in the Constitution of the Universe.

'The holistic value of the Constitution of the Universe is available in R̥k Veda; and the structuring dynamics of R̥k Veda, the laws that structure R̥k Veda and evolve into the physical material creation, are expressed in all the other 36 areas of the Vedic Literature.

'There are 37 values of the Vedic Literature, which constitute the 37 Chapters of the Constitution of the Universe. The 37 fundamental values of the Constitution of the Universe are the 37 qualities of consciousness or intelligence: R̥k Veda, the total expression of the Constitution of the Universe, and the 36 structuring dynamics of R̥k Veda, which constitute the structuring dynamics of the physiology, and evolve into the material expression of Vishwa, the universe.'

—Maharishi's Absolute Theory of Government.

More than 500 scientific research studies conducted at over 200 universities and research institutions in 30 countries have documented the beneficial effects of the technologies of consciousness of Maharishi's Vedic Science—Maharishi's Transcendental Meditation and TM-Sidhi Programme—and the prevention-oriented approaches of Maharishi Āyur-Veda to promote health. These research studies dem-

onstrate the development of all aspects of life—body, mind, behaviour, and environment.

The list below summarizes the scientific research findings demonstrating how the 37 qualities of consciousness expressed in the 37 areas of Veda and the Vedic Literature—the 37 chapters of the Constitution of the Universe—are enlivened in all aspects of human life through Maharishi's Transcendental Meditation and TM-Sidhi Programme and the approaches of Maharishi Āyur-Veda.

The numbers cited in parentheses after each research finding listed below are the numbers of the research studies in which this finding is located, as reprinted in the first five volumes (4,000 pages) of *Scientific Research on Maharishi's Transcendental Meditation and TM-Sidhi Programme: Collected Papers*.

Rk Veda—HOLISTIC

- Greater Integration of Brain Functioning—Use of the Latent Reserves of the Brain (N. N. Lyubimov, Moscow Brain Institute)
- Increased Integration of Brain Functioning (Vol. 1: 14–17, 20, 102; Vol. 2: 115, 117; Vol. 3: 205, 210, 211, 213, 215, 217, 218, 224; Vol. 4: 294–296; Vol. 5: 370, 371, 375)
- Increased Brain Wave Coherence (Vol. 1: 20, 21, 102; Vol. 3: 205, 210, 213, 215, 217, 218, 224; Vol. 4: 294, 296; Vol. 5: 370, 371)
- Correlations Found in Subjects Practising Maharishi's Transcendental Meditation and TM-Sidhi Programme, Between High EEG Coherence and Experience of Transcendental Consciousness (Vol. 1: 21)

1. Sāma Veda—FLOWING WAKEFULNESS

- Increased Alertness (Vol. 1: 29; Vol. 2: 164; Vol. 4: 308)
- Increased Intelligence (Vol. 1: 53–55, 62, 103; Vol. 2: 150; Vol. 3: 257, 261; Vol. 4: 307; Vol. 5: 387, 389, 390, 392, 393)
- Increased Intelligence Growth Rate (Vol. 1: 54; Vol. 3: 265; Vol. 5: 389, 390)
- Increased Mental Clarity and Wakefulness (Vol. 1: 93; Vol. 2: 147)
- Decreased Drowsiness (Vol. 2: 126, 147)
- Increased Blood Flow to the Brain (Vol. 2: 105, 106; Vol. 3: 194, 195)
- Correlations Found in Subjects Practising Maharishi's Transcendental Meditation and TM Sidhi Programme:
 - Between High EEG Coherence and Greater Intelligence (Vol. 4: 294);
 - Between High EEG Coherence, Higher States of Consciousness, and Quality of Experiences of the Transcendental Meditation Sidhi Programme (Vol. 1: 102; Vol. 3: 216)

2. Yajur-Veda—SACRIFICING (EVOLUTIONARY)

- Enhanced Creativity (Vol. 1: 62, 63, 103; Vol. 2: 150; Vol. 3: 257, 260; Vol. 4:

- 294, 305; Vol. 5: 392, 395)
- Decreased Anxiety (Vol. 1: 33, 35, 61, 62, 68, 71, 72, 74, 75, 78, 81, 84, 88–90, 92, 93, 95; Vol. 2: 125, 133, 138, 143, 145, 148, 150, 153, 154, 157, 160; Vol. 3: 234, 238, 268, 273, 275, 278, 280, 281, 284, 288, 290; Vol. 4: 308, 310, 311, 313, 314, 316; Vol. 5: 370, 399)
 - Decreased Neuroticism (Vol. 1: 54, 55, 65, 67, 74, 77, 78, 92; Vol. 2: 137, 158; Vol. 3: 267, 269, 277, 278, 280; Vol. 4: 308, 310; Vol. 5: 370)
 - Decreased Depression (Vol. 1: 65, 67, 74, 77, 78, 95; Vol. 2: 143, 147, 150, 158; Vol. 3: 238, 239, 268, 273, 277, 290; Vol. 4: 308, 313)
 - Decreased Psychosomatic Disturbance (Vol. 1: 65, 77, 95; Vol. 3: 232, 241, 277, 290)
 - Decreased Impulsiveness (Vol. 2: 138, 157; Vol. 4: 316)
 - Increased Emotional Strength: Decreased Unwelcome Thoughts and Compulsive Behaviour (Vol. 2: 150)
 - Increased Emotional Harmony and Absence of Regressive Behaviour (Vol. 2: 150)
 - Decreased General Maladjustment: Decreased Personality Disorder (Vol. 5: 371)

3. Atharva Veda—REVERBERATING WHOLENESS

- Increased Liveliness (Vol. 1: 65, 77; Vol. 3: 277, 290)
- Increased Sensitivity, Strength, and Flexibility of the Nervous System (Vol. 4: 301)
- Increased Neurological Efficiency:
 - Increased Efficiency of Information Transfer in the Brain (Vol. 2: 114, 116; Vol. 3: 214, 251; Vol. 5: 374);
 - Improved Spinal Reflex Activity (Vol. 3: 226, 227, 229);
 - Improvements in Reaction-Time Measures that are Correlated with Intelligence (Vol. 5: 390)
- Correlations Found in Subjects Practising Maharishi's Transcendental Meditation and TM-Sidhi Programme:
 - Between High EEG Coherence, Neurological Efficiency, and Experience of Transcendental Consciousness (Vol. 1: 21);
 - Between High EEG Coherence, Neurological Efficiency, and Flexibility of Concept Learning (Vol. 3: 219);
 - Between High EEG Coherence, Neurological Efficiency, and Superior Academic Performance (Vol. 3: 230, 231);
 - Between Experiences of Higher States of Consciousness and Superior Performance on Tests Measuring Perceptual Speed, Flexibility, Field Independence, and Psycho-Motor Speed (Vol. 3: 258)

4. Sthāpatya Veda—ESTABLISHING

- More Effective Interaction with the Environment: Improved Resistance to Stress (Vol. 1: 25–28; Vol. 2: 123; Vol. 5: 370)

- Improved Right Hemisphere Functioning—Better Spatial Localization (Vol. 2: 135)
- Extended Maharishi Effect: Improved National Economy as Measured by a Monthly Index of Inflation and Unemployment, Controlling for Changes in Major Economic Variables (Vol. 5: 403–406)

5. Dhanur-Veda—INVINCIBLE and PROGRESSIVE

- Increased Vigilance (Vol. 3: 251; Vol. 4: 300; Vol. 5: 380)
- Decreased Vulnerability (Vol. 2: 147)
- Decreased Aggressiveness (Vol. 1: 65, 73, 74, 77; Vol. 2: 147, 158; Vol.3: 284, 290; Vol. 4: 308)
- Decreased Hostility (Vol. 2: 142, 143, 158, 160; Vol.3: 278, 280; Vol. 4: 314)
- Maharishi Effect, Extended Maharishi Effect, and Global Maharishi Effect: Decreased Crime (Vol. 1: 98; Vol. 2: 166; Vol. 4: 318, 319, 320, 323, 325, 326, 328, 333, 334, 337; Vol. 5: 401, 402)
- Extended Maharishi Effect and Global Maharishi Effect: Decreased War Intensity and War Deaths (Vol. 4: 322, 331, 333, 335; Vol. 5: 410, 411)
- Extended Maharishi Effect and Global Maharishi Effect: Increased Progress Towards Peaceful Resolution of Conflict (Vol. 4: 322, 335, 337; Vol. 5: 409, 410)
- Global Maharishi Effect: Improved International Relations—Reduced Conflict Globally and Reduced Terrorism During Three Large Assemblies of Participants in Maharishi Transcendental Meditation and TM-Sidhi Programme (Vol. 5: 411)

6. Gandharva Veda—INTEGRATING and HARMONIZING

- Greater Harmony (Vol. 2: 165)
- Increased Naturalness (Vol. 1: 65, 77; Vol. 3: 277, 290; Vol. 4: 308)
- Increased Spontaneity (Vol. 1: 64, 65, 69, 70, 76, 77; Vol. 2: 151, 153; Vol. 3: 277, 290; Vol. 4: 308, 316)
- Decreased Tendency to Dominate (Vol. 1: 65, 77; Vol. 3: 268, 290)
- Decreased Hidden Mental Turbulence (Vol. 3: 269)
- Extended Maharishi Effect: Increased Positivity in National Mood (Vol. 4: 333)
- Extended Maharishi Effect: Decreased Turbulence and Violence in Society (Vol. 4: 322; Vol. 5: 410)
- Extended Maharishi Effect and Global Maharishi Effect: Increased Harmony in International Affairs (Vol. 4: 322, 337; Vol. 5: 409)

7. Shikshā—EXPRESSION

- Greater Ability to Bring the Inner Self to Healthy Expression (Vol. 2: 141)
- Improved Reading Comprehension (Vol. 2: 132)
- Improved Standardized Test Scores on Reading, and Language (Vol. 5: 385, 386)
- Decreased Stuttering (Vol. 1: 43; Vol. 4: 298)
- Improvements in Autism: Decreased Echolalic Behavior (Vol. 3: 262)

- Improved Speech in Mentally Retarded Subject (Vol. 3: 263)

8. Kalpa—TRANSFORMATION

- Increased Innovation (Vol. 1: 62)
- Increased Energy (Vol. 1: 62)
- Increased Vigour (Vol. 1: 65, 77; Vol. 3: 277)
- Greater Commitment to Personal Growth (Vol. 2: 138)
- Decreased Behavioural Rigidity (Vol. 1: 87, 103; Vol. 3: 250; Vol. 4: 300; Vol. 5: 380)
- Improved Problem-Solving Ability (Vol. 1: 58, 62)
- Greater Adaptability of Brain Functioning (Vol. 2: 120)

9. Vyākaraṇa—EXPANSION

- Increased Directedness (Vol. 5: 395)
- Greater Adaptability of Mental Orientation (Vol. 1: 71)
- Greater Optimism (Vol. 2: 138)
- Increased Persistence (Vol. 2: 153)
- Increased Learning Ability (Vol. 1: 56, 57; Vol. 3: 265; Vol. 4: 300; Vol. 5: 380, 385, 386)
- Increased Outgoingness and Tendency to Participate (Vol. 1: 73; Vol. 2: 150, 153)
- Increased Sensitivity to the Feelings of Others (Vol. 1: 73; Vol. 4: 304, 316)

10. Nirukta—SELF-REFERRAL DIRECTION

- Maintenance of a Relaxed Style of Physiological Functioning Outside of the Practice of the Transcendental Meditation Technique (Vol. 1: 6, 18, 30; Vol. 3: 197; Vol. 5: 356)
- Maintenance of Physiological Relaxation during a Task (Vol. 2: 122; Vol. 5: 372, 399)
- Increased Inner Calm and Tranquility (Vol. 1: 65, 73, 77; Vol. 2: 150; Vol. 4: 308, 316)
- Faster Recovery from Exertion (Vol. 1: 31, 53)
- Greater Inner Locus of Control (Vol. 1: 69; Vol. 4: 314)
- Increased Sensitivity to One's Own Needs and Feelings (Vol. 1: 69, 70, 72; Vol. 2: 151, 153)
- Increased Self-Satisfaction; Increased Moral-Ethical Self; Increased Social Self (Vol. 5: 371)
- Enhanced Self-Regard and Self-Esteem (Vol. 1: 62, 64, 67, 69, 76, 90; Vol. 2: 139, 151, 153, 156, 158; Vol. 3: 239, 266, Vol. 5: 371)
- Increased Self-Confidence and Self-Assuredness (Vol. 1: 65, 77; Vol. 2: 150; Vol. 3: 261, 277, 290; Vol. 4: 308)
- Greater Self-Control (Vol. 1: 65, 77; Vol. 2: 153; Vol. 3: 290; Vol. 4: 308)

11. Chhanda—MEASURING and QUANTIFYING

- Neurotransmitter Modulation: Change in Daily Cycle of Urinary 5-Hydroxyindoles, Metabolites Related to Serotonin (Vol. 5: 365)
- Increased Regularity and Intensity of EEG Alpha Activity in Frontal and Central Regions; Episodes of Rhythmical EEG Theta Activity in Frontal Brain Region (Vol. 1: 3)
- EEG Indications of Restful Alertness: Hypersynchrony and Rhythmicity; Synchronization of Anterior and Posterior Channels (Vol. 1: 14)
- Increased Orderliness and Integration of Brain Functioning: Rhythmic High Amplitude Beta Activity in All Channels; Synchronization of Anterior and Posterior Channels (Vol. 1: 15)
- Superior Perceptual-Motor Performance (Vol. 1: 48, 49)
- Increased Psycho-Motor Speed (Vol. 1: 103; Vol. 3: 250, 257; Vol. 5: 393)
- Increased Functional Efficiency of Psycho-Motor Co-ordination (Vol. 3: 250)
- Improved Motor-Cognitive Flexibility (Vol. 1: 103)
- Greater Scientific Orientation (Vol. 2: 138)

12. Jyotish—ALL-KNOWING

- Increased Foresight (Vol. 2: 153)
- Improved Comprehension (Vol. 2: 132)
- Increased Ability to Connect Past, Present, and Future Meaningfully (Vol. 1: 69, 70, 76, 94; Vol. 2: 151, 153, 155)
- Increased Time Competence: Increased Ability to Think and Act Efficiently in the Present (Vol. 1: 69, 70, 76, 94; Vol. 2: 151, 153, 155)

13. Nyāya—DISTINGUISHING and DECIDING

- Greater Ability to Process Information at Speed (Vol. 2: 123)
- Increased Ability to be Objective, Fair-Minded, and Reasonable (Vol. 4: 316)
- Increased Decision Making Ability (Vol. 2: 164)
- Greater Selectivity in Personal Relationships (Vol. 3: 268)
- Greater Intellectual Orientation (Vol. 1: 71; Vol. 2: 138)

14. Vaisheshika—SPECIFYING

- Increased Efficiency of Concept Learning (Vol. 3: 219)
- Greater Flexibility of Concept Learning (Vol. 3: 219)
- Faster Processing of Cognitively Complex Information (Vol. 5: 374)
- Orientation towards Positive Values: Better Recall for Positive than Negative Words; Lower Recognition Thresholds for Positive Words than Negative Words; More Positive Appraisal of Others (Vol. 5: 394)
- Greater Respect for the Views of Others (Vol. 2: 164)

15. Sāṃkhya—ENUMERATING

- Improved Standardized Test Scores on Mathematics (Vol. 5: 385, 386)

- Correlations Found in Subjects Practising Maharishi's Transcendental Meditation and TM-Sidhi Programme, Between High EEG Coherence and Improved Performance in Mathematics (Vol. 3: 221)
- Greater Skill in Solving Arithmetic Problems (Vol. 1: 58)
- More Rapid Cognitive Growth in Children: Superior Performance and Consolidation on Conservation Tasks Indicating Concrete Operational Skills
- Greater Ability to Assign Priorities (Vol. 2: 164)

16. Yoga—UNIFYING

- Experience of Pure Consciousness During the Transcendental Meditation technique (Vol. 1: 2, 7, 8, 20, 21, 99–102; Vol. 3: 197, 213, 216, 218, 258)
- Experience of Pure Consciousness Found to be Associated with: High EEG Coherence, marked Reductions in Respiration Rate, Heart Rate, and Metabolic Rate; Periodic Breath Suspension; Absence of Spontaneous Skin Resistance Responses; High Basal Skin Resistance (Vol. 1: 7; Vol. 3: 197, 205, 213, 218; Vol. 4: 293; Vol. 5: 358)
- Increased Trust (Vol. 1: 67; Vol. 2: 138, 150)
- Increased Unifying Ability (Vol. 5: 395, 396)

17. Karma Mīmāṃsā—ANALYSING

- Improved Verbal and Analytical Thinking (Vol. 1: 54–56, 58, 62, 63, 103; Vol. 2: 134; Vol. 3: 260, 265; Vol. 5: 387, 389, 390, 392)
- Improved Concentration (Vol. 2: 132)
- Faster Processing of Cognitively Complex Information in the Elderly as Measured by Event-Related Brain Potentials (Vol. 5: 374)
- Improved Ability to Deal with the Abstract and Complex (Vol. 1: 62)
- Increased EEG Coherence during Acquisition of New Information (Vol. 5: 372)
- Enhanced Principled Moral Thinking: Benefits of Transcendental Meditation Programme Further Enhanced by the TM-Sidhi Programme (Vol. 3: 270)

18 Vedānta—I-NESS or BEING

- Increased Self-Actualization: Increased Integration, Unity, and Wholeness of Personality (Vol. 1: 64, 67, 69, 70, 72, 74, 76, 78; Vol. 2: 144, 151, 153, 155; Vol. 3: 239; Vol. 5: 395)
- Increased Ego Strength (Vol. 1: 67; Vol. 2: 150, 153)
- Greater Self-Development (Vol. 3: 284)
- Stronger Self-Identity (Vol. 3: 274)
- Correlations Found in Subjects Practising the Transcendental Meditation and TM-Sidhi Programme:
—Between High EEG Coherence, Higher States of Consciousness and the Quality of Experiences of the Transcendental Meditation Sidhi Programme (Vol. 1: 102; Vol. 3: 216);